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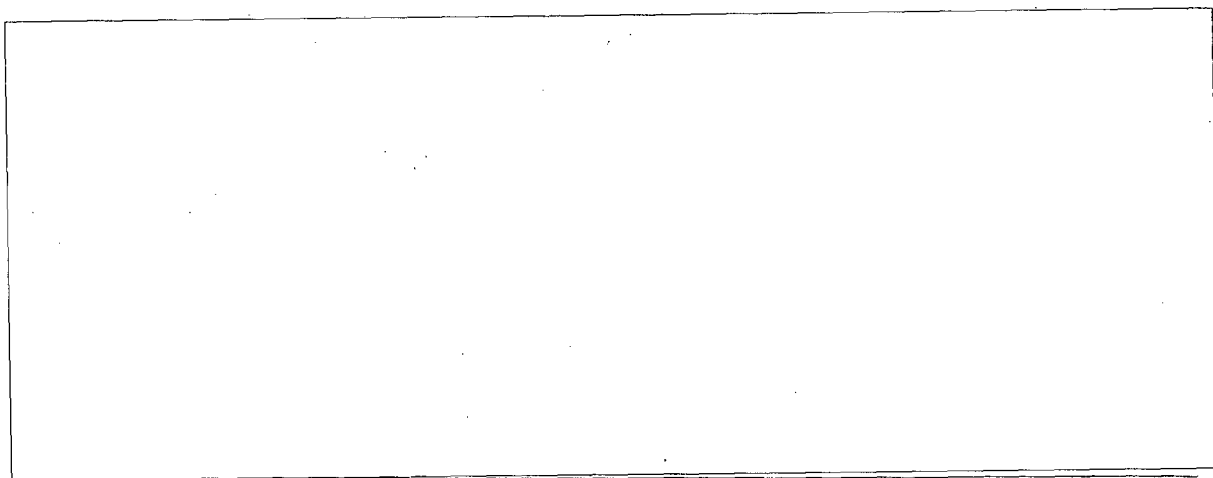
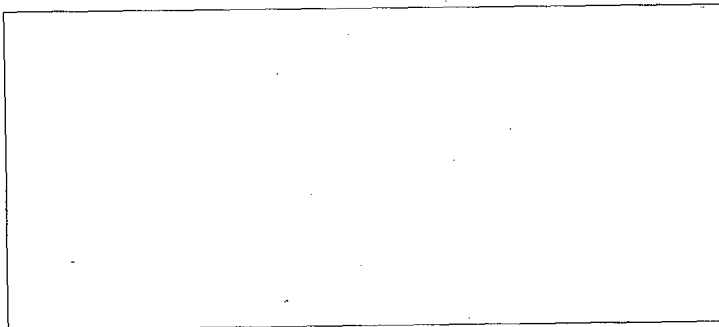
# The Development of Soviet Military Power: Trends Since 1965 and Prospects for the 1980s

An Intelligence Assessment

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SR 81-10035X  
April 1981

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# The Development of Soviet Military Power: Trends Since 1965 and Prospects for the 1980s

An Intelligence Assessment

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This assessment was prepared by [redacted]  
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SR 81-10035X  
April 1981

**The Development of  
Soviet Military Power:  
Trends Since 1965 and  
Prospects for the 1980s**

**Key Judgments**

The Soviet military buildup during the Brezhnev era has emphasized balanced development of all forces and increased use of military instruments for political ends. Since the mid-1960s the Soviets have:

- Increased the number of their intercontinental nuclear delivery vehicles nearly sixfold, overturning US quantitative superiority, improving their capabilities to fight a nuclear war, and giving the USSR an assured nuclear retaliation capability. Their number and accuracy make these weapons a major threat to US land-based missiles.
- Maintained the world's largest forces for strategic defense and a civil defense program to protect the political leaders and most of the essential work force. (Even so, they cannot prevent devastation by a US retaliatory strike.)
- More than tripled the size of their battlefield nuclear forces, reducing the credibility of NATO's nuclear weapons as a counterweight to the Warsaw Pact's larger conventional forces.
- More than doubled the artillery firepower of their divisions, increased ninefold the weight of ordnance that tactical air forces can deliver deep in NATO territory, and reduced the West's qualitative lead in such key areas as tank armor. (Many Soviet units, however, and most of the Pact units, are still equipped with older and less capable weapons.)
- Introduced new, heavily armed surface ships, nuclear-powered submarines, and naval aircraft and quadrupled the number of missile launchers on ships and submarines. The Soviet Navy is a growing constraint on Western ability to project naval power, but its forces are still vulnerable to air and submarine attack.
- Broadened military activities in the Third World—from aid alone, through use of Soviet forces in defensive roles and support of Cuban forces in combat, to offensive operations by Soviet units in Afghanistan.
- Supported their buildup by nearly doubling defense spending in real terms, more than doubling the size of the military R&D establishment, and increasing by one-third their military manpower.



During the 1980s the Soviets' options for further improvement of their military forces will be complicated by an uncertain international environment, foreign military threats, an economic slowdown, and a leadership succession. The range of possible choices for weapon systems, however, is largely determined by development programs already in train. We have identified about 85 percent of the new systems that could be introduced in the 1980s, and on the basis of this knowledge we project that:

- Continuing improvements in the accuracy of Soviet ICBMs will further increase the vulnerability of US fixed, land-based missile launchers. The Soviets will preserve their strategic offensive forces' ability to withstand a US attack by increasing the capability of sea-based strategic weapons and developing land-mobile systems. (Deployment of mobile systems would complicate the US effort to monitor potential limitations on strategic forces.)
- New strategic defense systems will increase the risk to bombers penetrating Soviet air space but will not be numerous or capable enough to counter large-scale attacks from missiles and aircraft. Civil defenses will improve marginally, increasing the leaders' protection and including more of the essential work force.
- Expansion and modernization of theater nuclear forces will continue, with improvements in short- and medium-range systems based in Europe. Unless countered by the West, this will further reduce the deterrent value of NATO's nuclear forces.
- Modernization of the Soviet's own theater air and ground forces (plus organizational changes that increase the units' firepower and flexibility) will keep pace with NATO's modernization efforts but outstrip improvements in the forces of the other Pact countries.
- New naval weapons will reduce the vulnerability of Soviet ships and submarines and improve their capabilities to contest Western use of open-ocean areas. The USSR may deploy its first attack aircraft carrier.
- Increases in airlift and sealift potential could give the Soviets a capability for long-range projection of military power in the 1990s. If the trend of increasing involvement in the Third World continues, the Soviets will use the capability more actively.

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These future activities will not require much expansion of the forces, but if the Soviets follow through with them (and current evidence suggests that they intend to), they will have to increase defense spending in real terms through the 1980s. Political strains resulting from growing economic problems could lead them to moderate the growth of spending, particularly late in the decade. They could curtail or stretch out some weapon programs and alter the support structure of some of their forces. (These steps would appear risky to a Soviet military planner, but would not necessarily have much effect on the trends outlined above or on the overall improvement in Soviet military capabilities that we project for the next decade.)

Poorer economic conditions and a more volatile political environment in the 1980s could increase the possibility of discontinuities in military policy. These could cause deviations on either side of our projection:

- An accelerated military effort could accompany a sharp deterioration in East-West relations or a dissolution of Soviet hegemony in Eastern Europe and lead to a greater expansion of strategic or conventional forces than we now expect.
- A reduced military effort might result from internal political turmoil in a deteriorating economic situation; it would probably affect conventional forces more heavily than strategic forces.

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**The Development of  
Soviet Military Power:  
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Prospects for the 1980s**

**Summary: The Past,  
Present, and Future of  
Soviet Military Power**

*The Soviet Military Effort Under Brezhnev*

For more than two decades, the USSR has been engaged in a major buildup of its military forces. In the Khrushchev era the emphasis was on strategic nuclear programs, but since Brezhnev came to power in 1964 there has been an across-the-board expansion and modernization of all the Soviet forces. Among the many factors underlying this buildup, the most basic is the attitude of the Soviet leaders that military might is a necessary and effective instrument of policy in an inherently unstable world. This attitude has been embodied in and reinforced by an ambitious military doctrine that calls for forces structured to fight and win future conflicts and by a political and economic system that gives priority to military requirements.

Taken together, these conditions have imparted a considerable momentum to the Soviet military effort. Thus, despite changes in the international environment, Brezhnev's detente policy, and Strategic Arms Limitation agreements, the overall pace of the Soviet military buildup has remained steady during the Brezhnev years. Annual Soviet military spending has nearly doubled in real terms and now consumes over one-eighth of GNP; military manpower has increased by one-third to more than 5 million;<sup>1</sup> defense research and development facilities have more than doubled in size; and weapon production facilities have expanded by nearly 60 percent.

The number of Soviet strategic nuclear weapons delivery vehicles has increased from a few hundred in 1965 to about 2,500 today, overturning the previous US quantitative superiority. (The United States has just over 2,000 delivery vehicles.) The accuracy of the newest Soviet weapons now exceeds that of US systems, creating a major threat to US fixed, land-based missiles. These improvements have enhanced the capability of Soviet forces to fight a nuclear war. Moreover, by hardening their land-based missile launchers and putting a greater number of ballistic missiles on submarines, the Soviets have made their strategic forces so survivable that even after absorbing a US attack they could destroy most of the US population and most US military and economic targets in a retaliatory strike.

<sup>1</sup> This figure includes about 1 million men who fulfill roles that the United States would not consider related to national security. (U)



Soviet planners also emphasize defense against strategic weapons, but their defenses cannot prevent similar devastation from a US retaliatory strike:

- The Soviets have introduced systems to detect and defend against ballistic missiles, but technical limitations and treaty constraints render them largely ineffective against a large-scale US missile attack.
- They have expanded and improved their air defense network (the world's largest), giving it a good capability against high-flying aircraft but only limited effectiveness against low-altitude penetration.
- Defense against missile-launching submarines is poor despite its high priority in naval planning, because the search and detection capabilities of Soviet forces are insufficient to locate submarines in the open ocean.
- Continuing attention to civil defense has provided protection for virtually all political leaders, most key workers, and about 10 percent of the urban residents; but the rest of the population would be dependent on evacuation, and economic and military facilities are still vulnerable. ☐

The Soviets have eliminated the West's former edge in short- and medium-range nuclear delivery systems in Europe. The number of Soviet tactical surface-to-surface missiles there has increased by a third, and the number of aircraft capable of delivering nuclear weapons in Central Europe has more than tripled. The Soviets have broken the monopoly held by NATO since the 1960s in nuclear artillery and have introduced other new tactical delivery systems with improved ranges, accuracy, readiness, and destructive power. They may also have nuclear landmines. With these improvements, Soviet theater forces are now in a better position to match any NATO escalation of a European conflict from one level of nuclear war to another, without using long-range theater nuclear systems based in the USSR.<sup>2</sup> Those systems have also been improved by deployment of the SS-20 intermediate-range ballistic missile with three independently targetable warheads and of the Backfire bomber with improved payload and air defense penetration capabilities. ☐

To the extent that Soviet intercontinental nuclear forces now check those of the United States and Soviet gains in theater nuclear forces have offset those of NATO, the balance of conventional forces in Europe has become increasingly significant. In the conventional area, the Soviets expanded their

<sup>2</sup> The Soviets would hope to confine a NATO-Warsaw Pact war to European territory, avoiding the use of systems based in the Soviet Union so as not to invite retaliatory attacks. Nevertheless, they doubt that nuclear escalation in such a war could be held within bounds. ☐

already large ground and theater air forces during the 1965-80 period and introduced modern systems, some of them equal or superior to those of NATO:

- Total ground forces manpower increased by nearly 50 percent, while the number of major weapons in a division increased by about a third and artillery firepower more than doubled.
- The number, variety, and capability of air defense systems available to tactical commanders increased rapidly, with deployment of all-weather missile-equipped interceptor aircraft and mobile air defense missiles and guns.
- The latest Soviet tanks (now common to most first-line Soviet units in Eastern Europe, but not yet widely deployed among units in the USSR) have armor that provides good protection against the most advanced antitank weapons.
- New tactical aircraft deployed in the 1970s have increased ninefold the weight of ordnance that Soviet theater air forces could deliver against targets in NATO's rear areas (the Benelux countries and parts of France, for example). More accurate bombing systems (radars, laser rangefinders, and computers) and precision munitions have improved Soviet capabilities against point targets and largely eliminated NATO's rear areas as sanctuaries in conventional war.

On the other hand, the Warsaw Pact's military potential is affected by its political cohesion and its will to use force. Pact performance on the field of battle would be heavily influenced by the attitudes and effectiveness of the non-Soviet armies, which have been assigned major roles in both combat and support. These armies are less modern than that of the USSR. More important, the solidarity and enthusiasm that they would exhibit in combat against NATO are open to serious question.

The Soviets also maintain large forces opposite China. Since the late 1960s, the number of Ground Forces divisions along the Sino-Soviet border has doubled and their total manpower has more than tripled. Expansion of Soviet tactical aviation forces since the late 1960s has also been directed primarily at China.

In the early 1960s, the Soviet Navy was a coastal defense force with limited capabilities for operations in the open ocean, but it is being transformed into an outward-looking force deploying heavily armed surface ships, high-speed submarines, and advanced aircraft. The number of ships has changed little, but the proportion of large surface combatants and nuclear-powered submarines is growing. Qualitatively, Soviet naval forces remain vulnerable to air and submarine attack; nuclear-powered submarines are noisier (and thus easier to detect) than their Western counterparts; and capabilities for distant combat operations—such as the landing of troops and provision of carrier-based air support—are extremely limited. But their numerous missile-equipped surface ships, submarines, and aircraft enable the Soviets to control their own coastal waters and to contest the use of open-ocean areas by the West.

To support the expanded combat capabilities of their forces, the Soviets have introduced space systems for communications, intelligence collection, navigation, and other military functions. They now have an average of about 90 satellites operational at any given time, of which about 70 percent are military and another 15 percent have both military and civilian uses. The Soviets have also introduced new procedures and systems for controlling military operations. These include an increase in the operational authority of the General Staff, creation of new intermediate levels of command, introduction of mobile and hardened command posts, and deployment of new communications systems. These measures have improved the flexibility, reliability, security, and survivability of command.

As their military power has grown at the intercontinental, theater nuclear, and conventional levels, the Soviets have increasingly used military instruments to achieve political gains, especially in the Third World. Soviet exports of military equipment to the Third World have increased rapidly since their beginning in the mid-1950s. During 1980, some \$14 billion worth of hardware was sold to the Third World, and in 1979 nearly 15,000 Soviet advisers were in Third World countries—more than four times as many as in 1965. Operations of naval ships outside home waters increased sixfold between 1965 and 1970, fluctuated for several years, and increased sharply again during 1979 and 1980. Soviet naval ships now make several hundred visits to Third World ports each year.

Military involvement in Third World conflicts has become more active and direct:

- In the late 1960s and early 1970s, Soviet air and air defense forces were used in defensive roles in the Middle East.
- In the mid-to-late 1970s, Soviet logistic support transported Cuban intervention forces to Angola and Ethiopia and sustained them there.
- In 1979, Soviet combat ground and air units invaded Afghanistan—the first direct involvement of Soviet ground forces outside the Soviet Bloc.

To support their growing military involvement overseas, the Soviets have improved the ability of their forces to project power:

- The lift capability of primary Soviet amphibious ships has more than tripled since 1965. These ships can transport some 10,000 to 12,000 men (but they are spread out among four fleet areas). Merchant ships, some of which have been specifically designed to support naval operations, are also available.
- The firepower, mobility, and air defense capabilities of the six combat-strength airborne divisions have improved with the deployment of more modern weapons.
- By introducing heavy transport aircraft, the Soviets have doubled their airlift capacity (but their capabilities remain inferior to those of the United States).

The Soviets have not developed many forces specifically for overseas invasion. They rely instead on general purpose forces designed principally for use in Europe but also suitable for operations in more distant areas to which they can deploy without opposition. Most areas of vital interest to them are close to the USSR, however, and thus Soviet requirements for long-distance intervention forces are less demanding than those of the United States.

#### ***Factors Affecting Future Military Programs***

As the Soviet leaders formulate their defense plans for the future, they face major external and domestic uncertainties:

- The fluid international situation dictates a prudent defense posture, and the Soviets' perceptions of emerging military threats argue especially for continued qualitative improvement in forces.

- On the other hand, to maintain even a modest rate of economic growth, those leaders must allocate more resources to capital investment and must improve labor productivity, in part by providing a rising standard of living.

This dilemma could cause political tension, particularly at a time of leadership transition.

These uncertainties make it particularly difficult to forecast Soviet policies. We have sufficient information on each of the factors involved, however, to make fairly informed judgments about their probable impact on the development of Soviet military power in the 1980s and to examine the possible effects of discontinuities in policy.

In the international arena, the Soviets are concerned by the prospect that the United States will augment its defense effort, by China's opening to the West, and by the possibility that US opposition to Soviet global aspirations will increase. They are troubled by instability on their borders—an insurgency in Afghanistan that they have been unable to suppress, an unpredictable regime in Iran whose fundamentalist Islamic ideology could spread to Muslim minorities in the USSR, and a major threat to Communist Party control in Poland. They probably view the 1980s as a decade of heightened competition, in which they will run a greater risk of military confrontation with the United States and of actual combat with major powers.

While they see increasing tension, the leaders and planners also see foreign nations making military efforts that threaten to undercut the strengths of Soviet forces and exacerbate their weaknesses. These threats, as well as deficiencies that the Soviets currently perceive in their own military capabilities, make continued pursuit of new weapon programs essential from the perspective of the Soviet planners. They see the possible US deployment of the M-X missile, for example, as a dual threat:

- Its survivability (from deployment on mobile launchers or in multiple shelters) could force the Soviets to expend all of their ICBM weapons against the M-X alone, were they to undertake a massive counterforce strike.
- Its accuracy increases the risk that the United States could neutralize the Soviets' land-based ICBMs, which provide nearly 75 percent of the weapons and warheads on their intercontinental nuclear delivery vehicles.

The Soviets also consider NATO's plan to deploy advanced ballistic and cruise missiles in Europe as part of a US strategy to threaten Soviet ICBMs and to reduce Soviet capabilities for theater war in Europe ☐

Many other military developments are a cause of concern to Soviet planners:

- They foresee that new Western ballistic missile submarines, with their greatly enlarged patrol areas, will further tax their inadequate antisubmarine capabilities.
- They are watching China's lengthening nuclear reach and the upgrading of French and British strategic forces.
- They regard NATO's programs for armor and antiarmor systems, precision munitions, and nuclear weapons as substantial and technologically challenging.
- They believe they must accelerate their efforts to compete with NATO in tactical aircraft and air defenses.
- They are worried about the antisubmarine capabilities of the West and the vulnerability of their ships to air and submarine attack.
- They see the widespread deployment of cruise missiles on US ships as reducing their capabilities in ship-to-ship warfare and—if the long-range Tomahawk cruise missile is deployed—as introducing a new strategic threat to Soviet territory.
- Finally, instability on their borders and US plans to form a rapid deployment force have increased Soviet concern about military developments in areas near the USSR ☐

As they attempt to react to the wide array of situations they perceive as either promising or threatening, Soviet policymakers will face a far more constrained resources picture than in the 1960s and 1970s:

- Soviet economic growth, which has been declining since the 1950s, has slowed to a crawl in the past several years. The real average annual growth in GNP in 1979 and 1980 was a little over 1 percent—the worst in any two-year period since World War II.
- In the 1980s, developing energy and demographic problems probably will hold GNP growth to an average of 2 percent or less—only half the rate at which defense expenditures have been growing.
- If military spending is allowed to follow its past trend, its share of economic output could increase from about one-eighth now to over one-sixth in 1990.

- More importantly, this increased military burden would reduce significantly the share of the annual increment to GNP that can be distributed among civilian claimants to ease the political tensions that arise from competition for resources. Military programs—especially those for nonstrategic forces—divert key resources from the production of critically needed equipment for agriculture, industry, and transportation. ☐

The problems of Soviet leaders in allocating resources could be further complicated by a political succession. Soviet President Brezhnev is 74 and in poor health, and most of his colleagues are also in their seventies, many of them also ailing. The departure of these men could affect military policy, but probably not immediately. The process of Soviet national security planning and decisionmaking is highly centralized, secretive, and resistant to fundamental change. It is strongly influenced by military and defense-industrial organizations, represented by men who have held their positions for many years, providing a continuity of plans and programs. Because of this momentum, and the political clout of the men and institutions that support defense programs, we doubt that Soviet emphasis on military power would decrease in the early stages of a leadership succession. ☐

The attitudes of the senior leaders are another buffer against any quick change of direction. If Brezhnev leaves the scene soon, the chances are that he would be replaced by one of the current group, most of whom share his general policy views. The two most likely candidates are party secretaries Kirilenko (who has expressed views somewhat more conservative than Brezhnev's on national security policy) and Chernenko (who has always been very close to Brezhnev). Eventually, of course, the interim leader will be replaced by a younger man; but among the younger Politburo members who appear to be candidates, most also seem to favor a continued high priority on defense. The effect of a political transition is inherently unpredictable, however, and we cannot exclude the possibility that major policy changes could result. ☐

In contrast to the imponderables of the economic and political environments, we have a good capability to identify most future Soviet weapon systems. The forces of the 1980s will be equipped primarily with systems already in the field and secondarily with those now entering production or in late stages of development. (Because it takes a decade or more to develop and test modern weapon systems, few of those now in early stages of development could be introduced in significant numbers in the 1980s.) We believe that we have identified about 85 percent of the new systems likely to be introduced

in this decade. Knowing Soviet military requirements and the amount of available development and production resources, we can postulate others. These identified and postulated systems, plus existing systems, will make up well over 90 percent of the weapons in the field in 1990. ☐

#### *Soviet Military Power in the 1980s*

Taking these factors into account, we can project in broad outline the prospects for further development of Soviet military power in the 1980s. We have made several projections. The most detailed (our baseline projection) is the one most consistent with currently available evidence. It assumes that pressures in favor of continuing the current policies—pressures from external challenges, from the Soviets' ambitious military doctrine, and from the powerful institutions that support defense programs—will offset to a large extent any inclination toward change that might arise from the leaders' growing economic concerns. The baseline projection allows for adjustments to defense expenditures—provided they do not significantly affect military capabilities. ☐

Because changes in political and economic conditions could lead to discontinuities in policy, we present three alternative projections: two that require an acceleration in the growth of military spending and one that requires an absolute reduction. We consider all of these to be less likely than the baseline projection but present a discussion of them intended to suggest reasonable limits to the options open to Soviet policymakers. ☐

*Baseline Projection.* For our baseline projection we estimate—on the basis of the weapon production and development programs we have identified—that the Soviets will continue their policy of balanced force development. Within the outlines of this continuity, however, we expect them to increase their emphasis on strategic forces that can survive a US attack, on strategic defense, and (to a lesser extent) on forces for the projection of Soviet power to distant areas. Manpower constraints will limit increases in the size of forces, but improvements will continue rapidly as new weapons become available. Improvements in Soviet military forces will lead to growing capabilities in many areas—including some areas of traditional Western strength. ☐

We expect the Soviets to carry out programs aimed at maintaining or increasing their lead over the United States in most measures of intercontinental nuclear attack capability and at upgrading their nuclear war-fighting capabilities. They will continue to improve the accuracy of their ICBMs and



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will develop a variety of payload options for responding to US deployment of new ICBMs. As a result, the Soviet ICBM force—with or without the SALT II Treaty—will have the theoretical potential to destroy most of the warheads on US land-based missiles throughout the decade. This potential will be greatest in the early 1980s, before the United States can deploy a new ICBM. But even in that early period, US forces could conduct a massive retaliatory strike. [ ]

To maintain survivable strategic forces in the face of a potential threat to their own fixed, land-based missiles, we expect the Soviets to increase the capability of their submarine-launched ballistic missiles and possibly (especially in the absence of SALT constraints) to deploy land-mobile ICBMs. They may introduce a new strategic bomber or an aircraft to carry long-range cruise missiles, and they may already be testing a sea-launched strategic cruise missile. [ ]

Should strategic arms control negotiations be resumed, these weapon developments could complicate monitoring—an already difficult US intelligence task. Land-mobile strategic weapons and cruise missiles cannot be counted with high confidence. As a result, monitoring strategic arms control agreements will be much more difficult in the 1980s than it was in the 1970s. [ ]

Air defense improvements have been identified at Soviet test ranges, and some are now entering deployment. These include new surface-to-air missiles and interceptor aircraft with radars that enable them to detect and engage low-flying targets. These defenses could make penetration of Soviet airspace much more difficult for large manned bombers of current types. The small size and low flight altitudes of modern cruise missiles present a more complicated problem, however, and we project that Soviet defenses will be less effective against these new systems during the 1980s. [ ]

The Soviets continue their antiballistic missile (ABM) programs, but the technical difficulties of detecting, identifying, and intercepting ballistic missiles have kept progress slow. Moreover, the deployment constraints of the 1972 ABM Treaty severely limit the effectiveness of defenses against missiles. (Should the Soviets abrogate the treaty, they could deploy ABM defenses widely in the latter half of the decade.) We expect continuing Soviet interest in antisatellite defenses and in high-technology systems for strategic defense. Possible developments in the late 1980s could include a space-based antisatellite laser system and a few laser air defense weapons. Continuing

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civil defense efforts will improve protection for the leaders and essential work force, but not for the general population or for military or economic facilities. Soviet capabilities against ballistic missile-launching submarines will remain poor.

We project that, despite the widespread Western deployment of counterforce weapons in the 1980s, the Soviets will maintain the capability to destroy most of the US population and industry in a retaliatory strike. Conversely, despite their own growing counterforce and defensive capabilities, they will not in the 1980s be able to prevent a devastating retaliatory strike by remaining Western ICBMs and air- and submarine-launched weapons.

Programs for theater nuclear weaponry will further erode NATO's nuclear advantage in Europe unless NATO takes action to offset them. The Soviets have programs under way to improve the accuracy and flexibility of nuclear delivery systems at all ranges. These include the introduction of new tactical aircraft and short-range ballistic missiles, the continuing deployment of nuclear-capable artillery, and further improvements in the number and quality of weapons on long-range theater nuclear delivery vehicles (missile launchers and aircraft) based in the USSR.

Our baseline projection includes improvements in Soviet Ground Forces. They will continue to emphasize the central role of armor; by the end of the decade most major Soviet units (and some units of their allies) will have tanks with advanced armor that provides good protection against current NATO weapons. The introduction of new artillery and air defense systems, as well as organizational changes that involve the addition of combat units and weapons, will increase the capabilities of Soviet divisions to respond to rapidly changing battlefield conditions. New fixed-wing ground attack aircraft and helicopters, with increased ranges and payloads and improved munitions, will increase the vulnerability of NATO's installations and forces and improve Soviet capabilities for close support of ground operations.

With these new systems, we expect Soviet theater forces to keep pace with NATO's modernization programs. The East European forces of the Warsaw Pact will improve less rapidly, however, because economic constraints will limit the amount of modern Soviet equipment they can afford to acquire and maintain.

Soviet naval programs will continue to emphasize open-ocean forces and the deployment of air power to sea. These programs will improve the Navy's capabilities to contest areas of the open ocean with the West. Ships and submarines with a new, long-range cruise missile are being introduced to offset Western gains in shipborne defenses. The Soviets are producing nuclear-powered attack submarines at an increasing rate, and the submarines introduced in this decade probably will be quieter (and harder to detect and track) than current models. ☐

Another naval development has important implications for Soviet military power—we have evidence of activities that probably are related to a program for a new aircraft carrier. It could be introduced in the late 1980s and probably would carry standard fighter or attack aircraft and be nuclear-powered. (The Soviets have helicopter carriers and ships that carry short-range, vertical and short takeoff and landing aircraft, but this could be their first attack aircraft carrier.) It would improve the Navy's air defenses and—more importantly—it could inaugurate a capability for projection of air power in distant areas. The USSR could not achieve a large-scale capability in the 1980s—only one or two carriers could be available—but this could emerge as a major theme in the 1990s and later. ☐

We expect other improvements in Soviet forces for power projection, besides the aircraft carrier. Introduction of a new class of landing ships—if it occurs in the 1980s—would increase the troop-lift capability of the Navy. The Soviets are reportedly working on a large transport aircraft, similar in size to the US C5A. If they produce such an aircraft, their airlift capabilities by 1990 could be substantially improved. ☐

In the 1980s, the Soviets will continue to improve their military space and command and control systems. We expect them to place in orbit new military space stations, to be used for intelligence purposes, and new unmanned satellites for real-time photographic reconnaissance and the detection of missile launches. We also expect further improvements in command and control, with emphasis on mobile systems and on the use of computers. ☐

With these new forces and capabilities, we expect the Soviets to maintain a high level of activity in the Third World to achieve both military and political goals. They may be willing to use their own forces more actively in the Third World, even if the activity brings a greater risk of confrontation with Western powers. ☐

If the Soviets carry out the programs that we have identified, their defense expenditures will continue to increase in real terms throughout the 1980s. The precise rate of increase is difficult to predict. It could be as high as 4 percent a year, if no constraints are imposed by arms control agreements and if the Soviets do not alter the support structure of their armed forces. A rate of 4 percent would increase the military drain on the economy and the potential for internal political problems.

In an attempt to address these problems, the Soviets might try to reduce the growth of their defense spending to, say, 2 percent or less. To accomplish this they could:

- Cut back the current production of some systems while continuing development of follow-ons.
- Stretch out new production programs and postpone the target dates for force modernization.
- Attempt to improve efficiency in the military and the defense industries.

They could even take advantage of the limited financial savings that arms control agreements would permit by deploying fewer weapons—but their past actions suggest that they would procure forces to the limits of any such agreements.<sup>3</sup>

If the Soviets chose to make adjustments, they could spread them out among all of the military services, minimizing the impact on the rate of modernization of the forces as a whole. These changes could be risky from the point of view of the military, but might be attractive to political leaders with a broader perspective. We believe adjustments sufficient to hold the growth in spending down to 2 percent would not significantly alter the major judgments of our baseline projection.

*Alternative Projections.* More radical changes in Soviet military policy are possible. Currently available evidence provides no clear indications that they are in the offing, but the interaction of political, economic, and technological forces in the 1980s could conceivably lead to major discontinuities.<sup>4</sup>

<sup>3</sup> Arms control agreements could also reduce uncertainty about Western military programs and thus enable the Soviets to avoid some of the costs of hedging against uncertainty. (U)

<sup>4</sup> For a discussion of the circumstances that could lead to major discontinuities and the clues that intelligence sources could provide for identifying them, see pages 96-102.

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One possibility is that the Soviets will reduce the level of military expenditures absolutely (rather than merely reducing the rate of increase). We believe this to be unlikely in the near term. Their dim view of the international environment would argue against such cuts, and the guidelines they have published for their next Five-Year Plan imply continued growth in defense spending. We have not detected any evidence that the Soviets are considering reductions. [ ]

Nevertheless, reductions cannot be excluded as a long-run possibility; and, as one alternative projection, we have examined the consequences of a cut in defense expenditures. We believe that to reduce expenditure levels in real terms the Soviets would have to alter the roles and missions of some of their armed forces. They probably would spread the cuts among all the military services—making them somewhat deeper in general purpose forces, especially ground forces. General purpose forces are larger than strategic forces and they take up more of the defense budget and use more of the energy, manpower, and key material resources needed by the civilian economy. Production of general purpose weapon systems competes directly with production of equipment for transportation, agriculture, and manufacturing. (The resources devoted to production of strategic weapons, on the other hand, are more specialized and less readily transferable to important civilian uses.) [ ]

Another alternative projection considers the possibility that the Soviets will increase defense spending more rapidly than in the past, to support a stepped-up military competition. This effort (focused on either strategic or conventional forces) could expand the forces and improve capabilities more rapidly than is forecast in our baseline projection. The range of program options is broad enough to permit a major increase in defense spending, and Soviet military-industrial capacity is large enough to sustain it. Such an increase would affect the distribution of economic resources significantly, however (especially if it were in conventional forces), and its political consequences could be extremely serious:

- The Soviets' ability to increase investment resources critical to long-term economic growth would be reduced substantially.
- Per capita consumption might decline in real terms late in the decade.
- Key sectors of the economy would be disrupted. [ ]

We do not know at what point the Soviets would find an increased defense burden to be unacceptable. This would depend on the international environment and the outlook of the leaders in power. Judging by their past behavior,

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we believe that they would prefer, if possible, to keep defense expenditures within their current growth rate, while still pursuing their military goals.

- The Soviets probably will seek to constrain US programs and to reduce their uncertainty about future US capabilities by urging further arms control negotiations.
- They will also attempt, through propaganda and diplomacy, to undermine Western cohesiveness on security issues and to slow the pace of West European defense programs.

The Soviets' incentives for such actions will increase as their economic growth slows in the 1980s. But Soviet leaders place a high premium on military power and will not, for economic reasons alone, accept constraints on defense programs that they consider vital to their interest.

#### *Background and Structure of This Report*

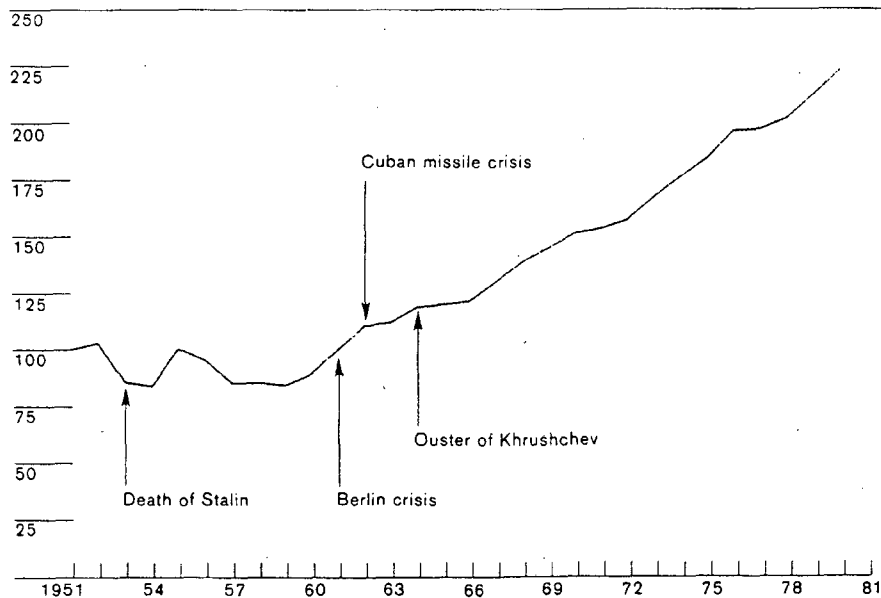
This report is based on a major interdisciplinary research effort carried out by the National Foreign Assessment Center during the 1979-80 period. It surveys the development of Soviet military power in the Brezhnev era—a period of relative economic prosperity and political stability—and outlines its probable evolution in the 1980s, when declining economic growth, a leadership succession, and a complex international environment will pose difficult choices for Soviet political and military leaders. To improve our understanding of these choices, more than 40 individual research projects were undertaken by the Offices of Central Reference, Economic Research, Imagery Analysis, Political Analysis, Scientific and Weapons Research, and Strategic Research. The judgments in this paper are based primarily on the results of those projects, a partial listing of which appears in appendix A.

Beginning with a discussion of the Soviet military buildup under Brezhnev and of the factors underlying it, the paper then discusses the forces that will affect Soviet power and policies in the 1980s. These ideas underlie our baseline projection for the period through 1990 (page 73). Finally, several alternative courses of action that the Soviets could follow are outlined, as well as the conditions and constraints that bear on Soviet behavior and the clues that could alert us to changes in Soviet military policy.

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**Trends in Soviet Defense Expenditures**  
(based on estimates in constant 1970 rubles)

Index: 1951=100



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## The Development of Soviet Military Power: Trends Since 1965 and Prospects for the 1980s

### Soviet Military Power in the Brezhnev Era

#### The Foundation of Power: Trends in Military Policy and Doctrine

##### Khrushchev's Legacy

When Brezhnev and his colleagues took power in late 1964, they inherited a military and defense-industrial establishment that in many respects bore Khrushchev's personal stamp. Khrushchev had restructured the Soviet armed forces—against the advice of many military professionals—in the mid-1950s. He slashed conventional forces and expanded the research and development (R&D) establishment. He focused his efforts on missiles and nuclear weapons—giving responsibility for development of the missile industry to Brezhnev—and created the Soviet aerospace industry as we know it today.

Soviet military doctrine of the Khrushchev period held that a future war would be a short, decisive conflict that would escalate almost immediately to theaterwide and intercontinental nuclear strikes. In support of these doctrinal notions, Khrushchev emphasized offensive missiles and strategic defense forces and downplayed the importance of intercontinental bombers, large standing armies, and conventional air and naval forces. In the late 1950s he reduced the defense budget, in large part by cutting back the size of the general purpose forces. The smaller forces that remained were to be reequipped with missiles and other systems that would enable them to operate in a nuclear environment. Military expenditures began to rise by 1960, driven primarily by increases in the amount of resources devoted to the development and production of missile and space systems.

In the early 1960s a series of events reawakened Soviet interest in more balanced military forces and gave a further impetus to defense spending:

- The Berlin crisis and the Cuban missile crisis strengthened Soviet resolve to shake off strategic inferiority and led to an intensification of the effort on intercontinental nuclear forces.
- Political relations with China worsened.
- NATO began to exercise a doctrine of "flexible response," which would involve a period of nonnuclear war. This obliged Soviet planners to reconsider their tenet that war would begin with a decisive nuclear exchange, and to plan for conventional operations as well. It also provided a rationale for improvement of the conventional forces that Khrushchev had downgraded.

##### Military Policy in the Brezhnev Years

The forces for nuclear war that Khrushchev had emphasized were not well suited to meet these varied demands. As Khrushchev's power waned, the military leaders reasserted their views and pressed for more balanced force development. By the time of his ouster, a consensus was emerging on a policy of across-the-board expansion and modernization of all the military forces. The new leaders reversed the reductions in ground and theater air forces and approved development programs for new tactical aircraft, naval ships, and ground force weapons, all of which would be suitable for operations in both conventional and nuclear war. During the late 1960s they initiated a major buildup of forces opposite China. And at the same time they maintained the vigorous development and deployment programs for strategic nuclear forces that marked the USSR's emergence as a superpower.



### *Organization of the Soviet Military Establishment*

*Since 1960, Soviet military forces have been organized into five services:*

- *The Ground Forces are responsible for land combat missions.*
- *The Air Forces are made up of Frontal (tactical) Aviation, which operates theater air defense and ground attack aircraft, including attack and support helicopters; Long Range Aviation, which is responsible for bombing missions against both intercontinental and peripheral targets; and Military Transport Aviation, which is charged with transporting troops and materiel.*
- *The Navy has a force of ballistic missile submarines for intercontinental attack, general purpose naval forces intended to control waters near the USSR and to deny to enemy navies the use of other ocean areas, coastal defense forces to protect ports and harbors, and a small force of Naval Infantry trained for amphibious operations.*
- *The Strategic Rocket Forces operate land-based ballistic missiles of intercontinental range and also long-range nuclear missiles for attacking targets on the periphery of the USSR.*
- *The National Air Defense Forces are responsible for defense against air and missile attack and operate many of the Soviet Union's space systems.*

*The activities of these services are planned and directed by a General Staff and supported by the administrative apparatus of the Ministry of Defense. The military establishment also includes construction and transportation units, as well as a large force of border guards and internal security troops.*



Khrushchev's successors continued to pursue a balanced force development policy through the 1970s. They not only maintained the momentum of strategic force improvements but increasingly concerned themselves with more complex and demanding scenarios for employment of their military power. These have evolved into a set of concepts—codified in Soviet military doctrine—that calls for forces structured to fight at any level, from a limited conventional conflict to protracted nuclear war. [redacted]

By the mid-1960s, Soviet theater warfare doctrine envisioned a period of conventional conflict preceding nuclear war. The principal task of Soviet forces in the conventional period is to destroy or disrupt the enemy's nuclear forces—the Soviet tactical air force is to attack airfields, theater nuclear delivery systems, and nuclear weapon storage sites, and the naval forces are to attack enemy aircraft carriers and missile-launching submarines. The doctrine does not specify the length of the conventional period, and Soviet planners acknowledge that it could last for weeks, but they still consider eventual escalation to nuclear war to be likely. They apparently believe that they must plan for a war on two fronts, with Soviet and allied forces engaging both NATO and China simultaneously. They also have given increasing attention in their military theory to "local wars" that are limited in area and in the scale of conflict. [redacted]

The Soviets doubt that escalation can be controlled after either side crosses the nuclear threshold by using any nuclear weapon. They apparently intend to preempt, by striking first and heavily, if they discern that NATO is about to resort to massive use of nuclear weapons in the theater. [redacted]

Doctrine for the use of intercontinental attack forces has also become more flexible. Before the mid-1960s the Soviets visualized using their ICBMs in a single, massed preemptive strike or—if the enemy struck first—in a single retaliatory strike with their remaining forces. (They hoped to have strategic warning of US preparations, which would enable them to preempt a US strike.) In the late 1960s the Soviets began to examine other employment requirements. One, for

# The Dimensions of Soviet Military Power: Status of Forces, End 1980

## *Strategic Attack Forces*<sup>a</sup>

ICBM launchers	1,416 <sup>b</sup>
SLBM launchers <sup>c</sup>	950
Long-range bombers <sup>d</sup>	145
Total delivery vehicles	2,511

## *Strategic Defense Forces*

Ballistic missile early warning radars	9
ABM launchers	32
Air defense radars	7,375
Air defense fighters	2,580
Surface-to-air missile launchers	9,464

## *Ground Forces*

Total manpower	1,700,000
Tanks	48,000 <sup>e</sup>
Armored personnel carriers	43,000 <sup>e</sup>
Divisions	184
Artillery pieces	24,000 <sup>e</sup>
Tactical surface-to-air missile launchers	3,000 <sup>f</sup>

## *Tactical Air Forces*

Frontal Aviation fighter-interceptor aircraft	1,980
Frontal Aviation fixed-wing ground attack aircraft	2,115
Frontal Aviation reconnaissance aircraft	705
Attack helicopters	670

## *Tactical Nuclear Forces*

Nuclear-capable tactical aircraft in Frontal Aviation <sup>g</sup>	3,990
Ground Forces tactical missile and rocket launchers	1,328
Nuclear-capable artillery pieces	516
Total delivery vehicles	5,834

## *Peripheral Attack Forces*

MRBM and IRBM launchers	589
Peripheral SLBM launchers <sup>h</sup>	39
Blinder and Badger bombers	614
Backfire bombers	69
Total delivery vehicles	1,311

<sup>a</sup> All forces, including those undergoing conversion.

<sup>b</sup> Includes 18 SS-9 launchers at a test range that are considered to be part of the operational force.

<sup>c</sup> Includes only submarines and launch tubes counted under the Strategic Arms Limitation Interim Agreement.

<sup>d</sup> Excludes aircraft configured as tankers, reconnaissance, or ASW platforms and aircraft at test facilities.

<sup>e</sup> Excludes equipment in storage; artillery figure excludes mortars.

## *General Purpose Naval Forces*

Aircraft carriers	2
Cruisers	37
Destroyers	63
Frigates 3,000 tons or over	29
Total major surface combatants	131
Frigates under 3,000 tons	149
Diesel-powered submarines	183
Cruise missile	21
Torpedo attack	162
Nuclear-powered submarines	100
Cruise missile	48
Torpedo attack	52
Total general purpose submarines	283

## *Power Projection Forces*

Military Transport Aviation heavy transports	190
Airborne divisions	7 <sup>i</sup>
Total personnel	38,000
Large amphibious ships	84
Naval Infantry units	3 regiments and 1 under-strength division
Total personnel	12,000

## *Military-Economic Resources*

Defense spending	12 to 14 percent of GNP
Dollar cost of defense activities in 1980	\$175 billion (1979 prices) (50 percent higher than US outlays in 1980)
Total military manpower	5,200,000 <sup>j</sup>

<sup>f</sup> Excludes some 21,000 short-range hand-held SAM launchers.

<sup>g</sup> Includes all aircraft technically capable of delivering nuclear weapons, even though some aircrews are not trained for that mission.

<sup>h</sup> Includes SS-N-5 launchers on older submarines, both nuclear and diesel powered. Other launchers may also have a peripheral mission.

<sup>i</sup> Includes one training division.

<sup>j</sup> Includes internal security, construction, and transportation troops.

example (based on recognition that they could not be sure of receiving strategic warning), is the launch of missiles on receipt of warning that an enemy attack is actually under way. Other options envisage variations of protracted nuclear conflict, lasting up to several weeks. Under all of these options, the Soviets stress the requirement to limit damage to themselves by undertaking counterforce strikes against the enemy's strategic weapons for attacking the USSR. [ ]

To meet this ambitious range of options and to respond to the threats that they perceive from China and the West, the current Soviet leaders have maintained a broadly based and costly military program over more than a decade and a half. This program has markedly increased the number and sophistication of Soviet weapons and the capabilities of Soviet forces to execute their military missions. (See table on page 3 for the major Soviet holdings and appendix C, page 127, for the characteristics of major Soviet weapons.) [ ]

Soviet military forces now exceed those of the United States in manpower and most types of weapons and equipment, and the costs of Soviet defense activities are larger than US defense spending. Moreover, the quality of the Soviets' new weapons has improved. Their newest ICBMs, for example, are more accurate than those of the United States, and their latest tanks are protected by advanced armor more effective than that of most Western tanks. As the Soviets have expanded and modernized their military forces, they have increasingly used military instruments in pursuing foreign policy goals. [ ]

### The Evolution of Power: Trends in Military Forces

#### Strategic Attack Forces

The principal developments in Soviet strategic (intercontinental) attack capabilities have been the overturning of US quantitative superiority in intercontinental delivery vehicles,<sup>5</sup> the emergence of a preemptive threat to US fixed, land-based missiles, and the improved ability of Soviet forces to survive an attack and deliver retaliatory strikes. An intense and costly effort has brought the Soviets to a strategic

<sup>5</sup> The Soviets also maintain large missile and air forces based in the USSR and intended for nuclear attacks against targets in Eurasia. These are sometimes referred to as "peripheral strategic forces" or "long-range theater nuclear forces." In this paper we discuss them under the heading of theater nuclear forces. [ ]

posture that is at least equal (and by some measures superior) to that of the United States. Soviet strategic forces today:

- Have about 25 percent more delivery vehicles (missile launchers and bombers) than US strategic forces have, but about 30 percent fewer weapons (warheads and bombs).
- Have some 40 percent more equivalent megatonnage (a measure of capability against soft targets like cities) than do US forces.
- Have surpassed the US forces in certain key technological characteristics, especially the accuracy of the newest ICBMs.
- Have deployed twice the destructive potential needed to level the US urban area. (US forces could destroy the Soviets' smaller urban area three times over.)
- Have more weapons capable of attacking hard targets (accurate and powerful enough to damage a missile silo, for example) than the US has silos.
- Have the theoretical capability to destroy 60 to 75 percent of the US ICBM force in a first strike. [ ]

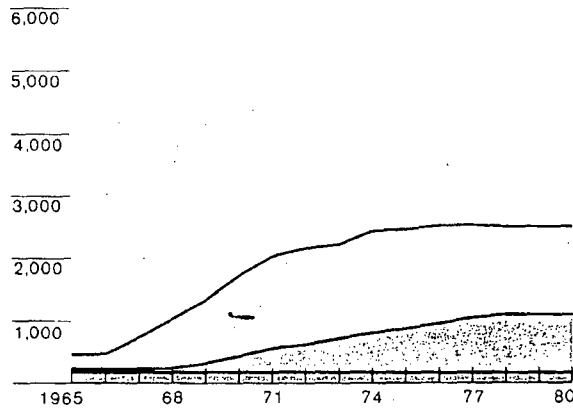
This improvement in the Soviet strategic posture resulted from an increase up to the early 1970s in the number of deployed strategic nuclear delivery vehicles and rapid improvement after that in their characteristics. The number of individual weapons carried by the delivery vehicles in the Soviet intercontinental nuclear arsenal has increased from a few hundred in 1965 to nearly 6,000 today. The area of soft targets that these weapons could destroy has increased fourfold. The Soviets' capability to attack hard targets, which is determined by the warheads on their newer ICBMs, has increased sharply since the late 1970s. [ ]

ICBMs are the mainstay of the Soviet intercontinental attack force, accounting for more than half of the delivery vehicles and three-fourths of the nuclear warheads. In the mid-1960s the ICBM force consisted of about 225 SS-7 and SS-8 missiles, many at above-ground launch sites that were highly vulnerable to attack. Between 1966 and 1972, about 1,400 launchers were added for the SS-9, SS-11, and SS-13 missiles—systems that were more accurate and had shorter reaction times than their predecessors and were deployed in hardened silos that protected them better against enemy strikes. [ ]

## Trends in Soviet Strategic Attack Forces

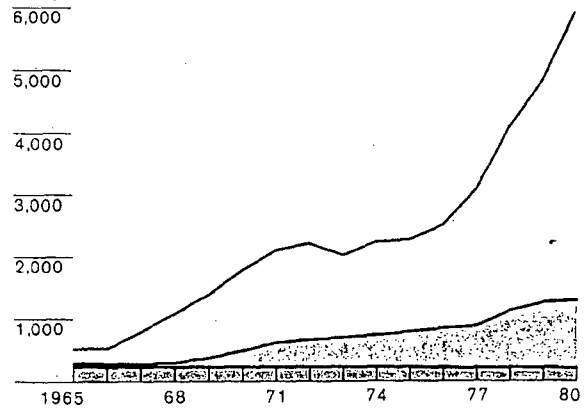
### Intercontinental Nuclear Delivery Vehicles

Launchers and aircraft



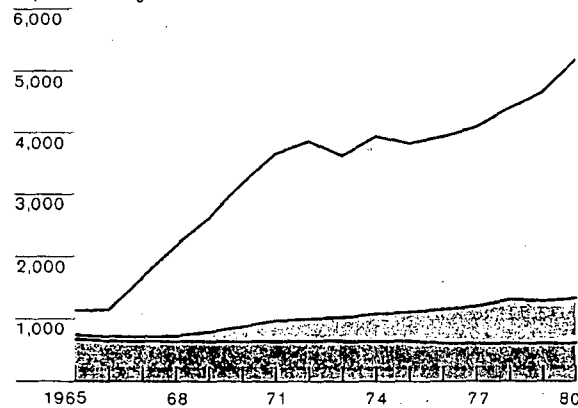
### Number of Individual Weapons for Intercontinental Attack<sup>a</sup>

Weapons



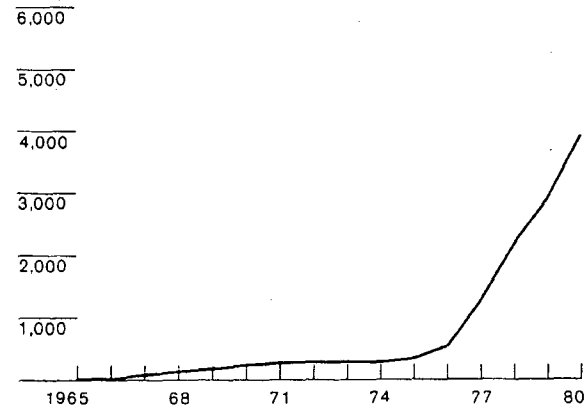
### On-Line Equivalent Megatonnage for Intercontinental Attack<sup>a,b</sup>

Equivalent megatons



### On-Line Hard Target Weapons for Intercontinental Attack<sup>a,c</sup>

Weapons



<sup>a</sup> Excludes equipment off line for conversion or modernization.

<sup>b</sup> Equivalent megatonnage provides a rough assessment of the theoretical capabilities that yield and number of weapons provide against soft area targets. Expressed in equivalent megatons, the area of lethal effect of a weapon is equal to weapon yield raised to the two-thirds power if less than one megaton or to the square root of the yield if greater than one megaton.

<sup>c</sup> Soviet hard target weapons are defined as those that have a damage expectancy of at least 50 percent resulting from two-on-one targeting of silos or one-on-one targeting of M-X shelters.

ICBMs  
SLBMs  
Bombers

## Accuracy of Intercontinental Missiles: Trends and Implications

The accuracy with which a nuclear warhead can be delivered is the most important determinant of its capability to destroy a hardened target like a missile-launching silo. One of the Soviets' principal goals in modernizing their intercontinental attack force has been to improve the accuracy of their ICBMs and thus their potential for destroying US ICBM launchers. New Soviet ICBMs are more accurate, and some of the newest are more accurate than the most advanced US ICBMs.

The proliferation of highly accurate intercontinental nuclear weapons has increased the vulnerability of fixed, land-based weapons. Calculations of the theoretical capability of the Soviet ICBM force, using two weapons against each silo, show that some 60 to 75 percent of US ICBM launchers could be destroyed in a Soviet first strike.

Both the United States and the USSR have tried to make their ICBM forces more survivable—at first by hardening the launchers, and then, as increasing weapon accuracy undermined these efforts, by considering mobile basing. The Soviets developed a mobile ICBM, the SS-16, but did not deploy it, and they have fielded a mobile missile of intermediate range, the SS-20. The United States is studying mobile basing options for the M-X ICBM system, which is currently in the engineering development stage. Mobile basing schemes can complicate the verification of compliance with arms control agreements.

The US-USSR Interim Agreement of 1972 prohibited the construction of new launchers and required the Soviets to dismantle existing ICBM launchers in compensation when they deployed launchers for ballistic missiles on new submarines. Modernization of the land-based ICBM force continued, however, as the Soviets deployed new versions of the SS-11 and, more importantly, equipped more than 750 launchers with the latest generation of ICBMs—the SS-17, SS-18, and SS-19. This improved the force in several ways.

## Accuracy of Current US and Soviet ICBMs

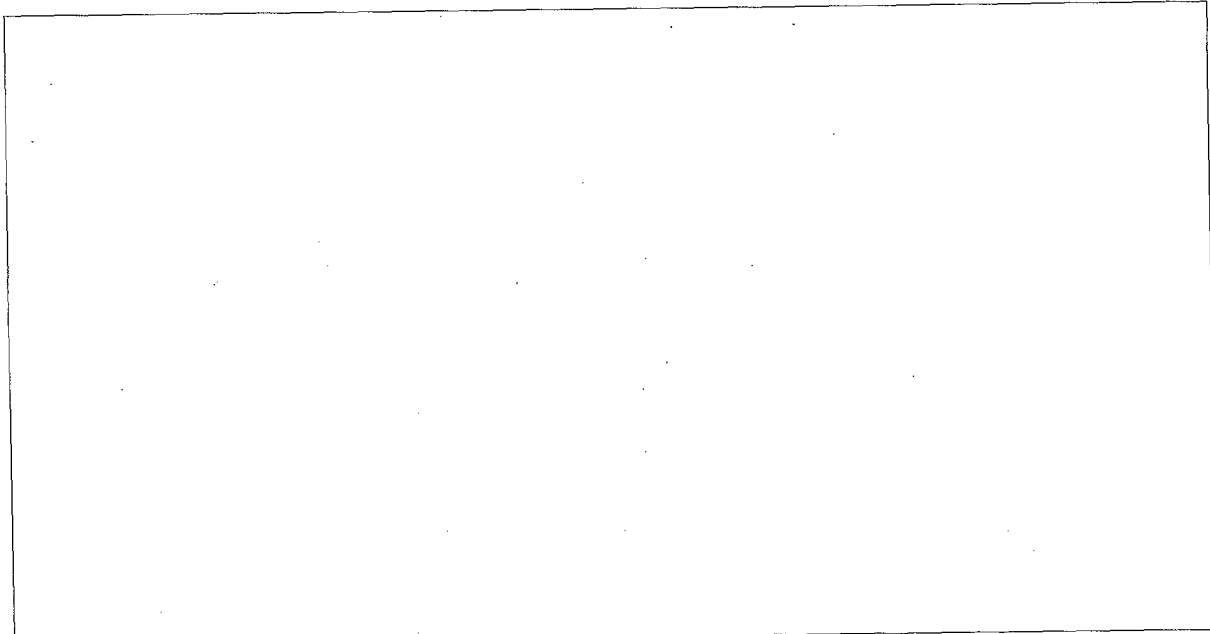
Missile	Year Operational	Accuracy (Meters) <sup>a</sup>
<b>US</b>		
Titan II	1963	
Minuteman II	1966	
Minuteman III	1970	
<b>Soviet</b>		
SS-11 Mod 1	1966	
SS-11 Mod 2	1973	
SS-11 Mod 3	1973	
SS-13 Mod 1	1969	
SS-13 Mod 2	1972	
SS-17 Mod 1	1975	
SS-17 Mod 2	1977	
SS-17 Mod 3	1979	
SS-18 Mod 1	1974	
SS-18 Mod 2	1976	
SS-18 Mod 3	1976	
SS-18 Mod 4	1979	
SS-19 Mod 1	1975	
SS-19 Mod 2	1977	
SS-19 Mod 3	1979	

<sup>a</sup> Accuracy is measured by circular error probable (CEP). This is the radius of a circle, centered on the target, within which 50 percent of the warheads are expected to fall.

The newer missiles carry multiple independently targetable reentry vehicles (MIRVs), so that the force can attack more targets even though it has fewer launchers than it had in 1972. The silos for the SS-17, SS-18, and SS-19 are considerably more resistant to attack than those for the SS-9 and SS-11 they replaced. (They are also harder than US missile silos.) Finally, the latest versions of the SS-18 and SS-19 are more accurate than the most advanced US ICBMs.

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### Launcher for the SS-18 Heavy ICBM



*The SS-18 was first deployed in 1974. Four modifications of the missile are operational, two with single reentry vehicles and two with eight or 10 independently targetable reentry vehicles. Like all other current Soviet ICBMs, the SS-18 is deployed in silo launchers. Because these launchers are fixed, take months to construct, and have a number of supporting facilities, we can count the current numbers of ICBM launchers with high confidence.*

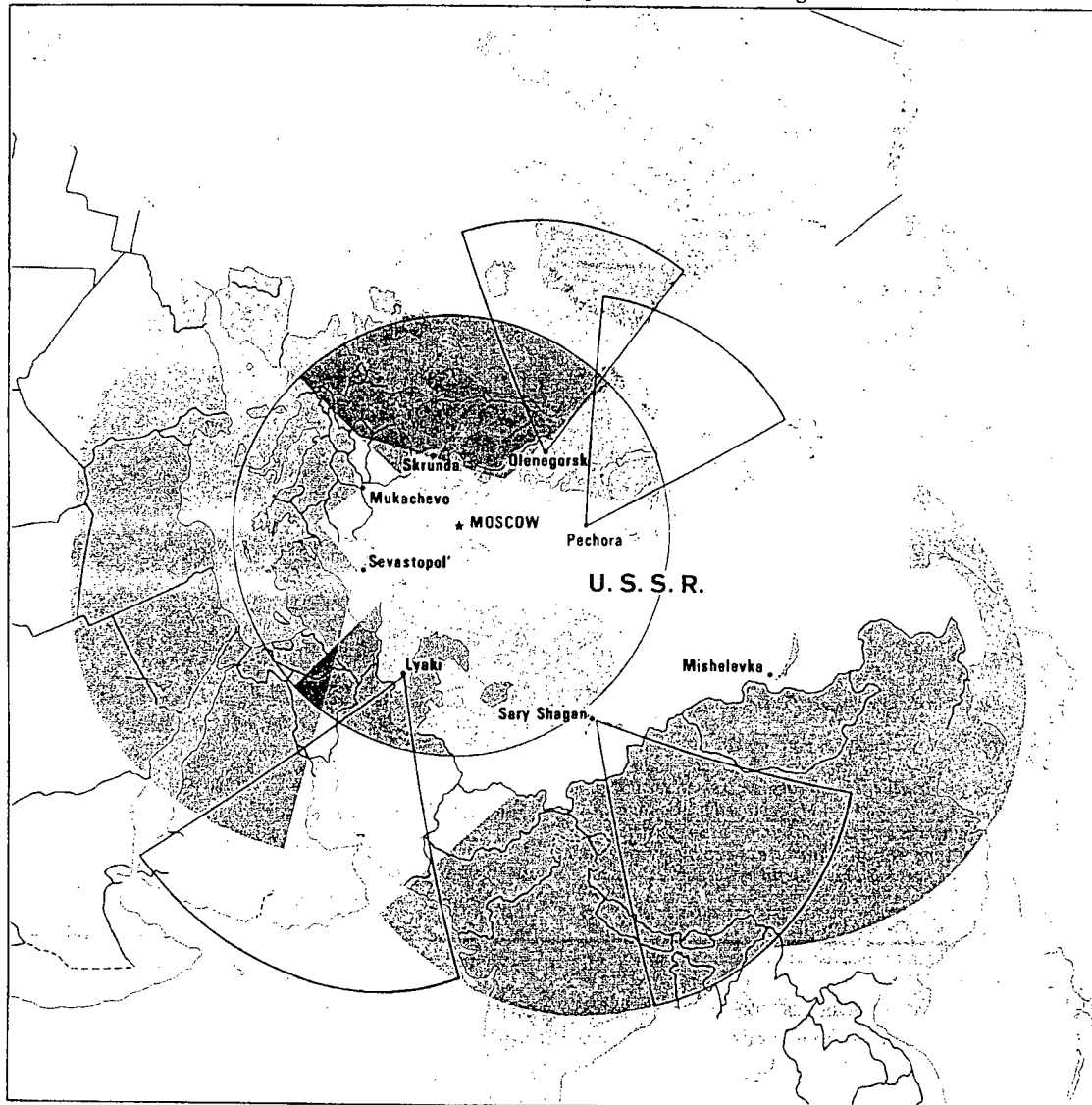
[REDACTED]





The Soviets have also increased the size of their strategic force at sea. In the mid-1960s their submarine-launched ballistic missile (SLBM) force consisted primarily of G- and H-class submarines, each of which carried three missiles. The missiles' ranges were so short that the submarines would have to come close to the US coast (risking detection) before launching. The force was expanded and modernized, beginning in 1968, with deployment of the Y-class nuclear-powered ballistic missile submarines (SSBNs), which carry 16 SS-N-6 missiles. The range of the missiles permitted the Y-class submarines to cover targets from the open ocean. [REDACTED]

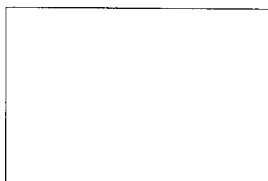
The Y-class program was followed in 1973 by introduction of the D-class, which carries 12 or 16 launchers for long-range SS-N-8 or SS-N-18 missiles. These missiles—which now make up nearly half of the launchers in the SLBM force—enable the launching submarine to attack targets in the United States while operating in or near Soviet-controlled waters. The SS-N-18, introduced in 1978, is the first Soviet SLBM with MIRVs. [REDACTED]

In contrast to the strategic missile forces, the Soviet intercontinental bomber force has declined slightly in size since the mid-1960s. It now consists of about 145 Bear and Bison aircraft—both types introduced in the mid-1950s. [REDACTED]

# Coverage of Soviet Ballistic Missile Early Warning and Battle Management Radars

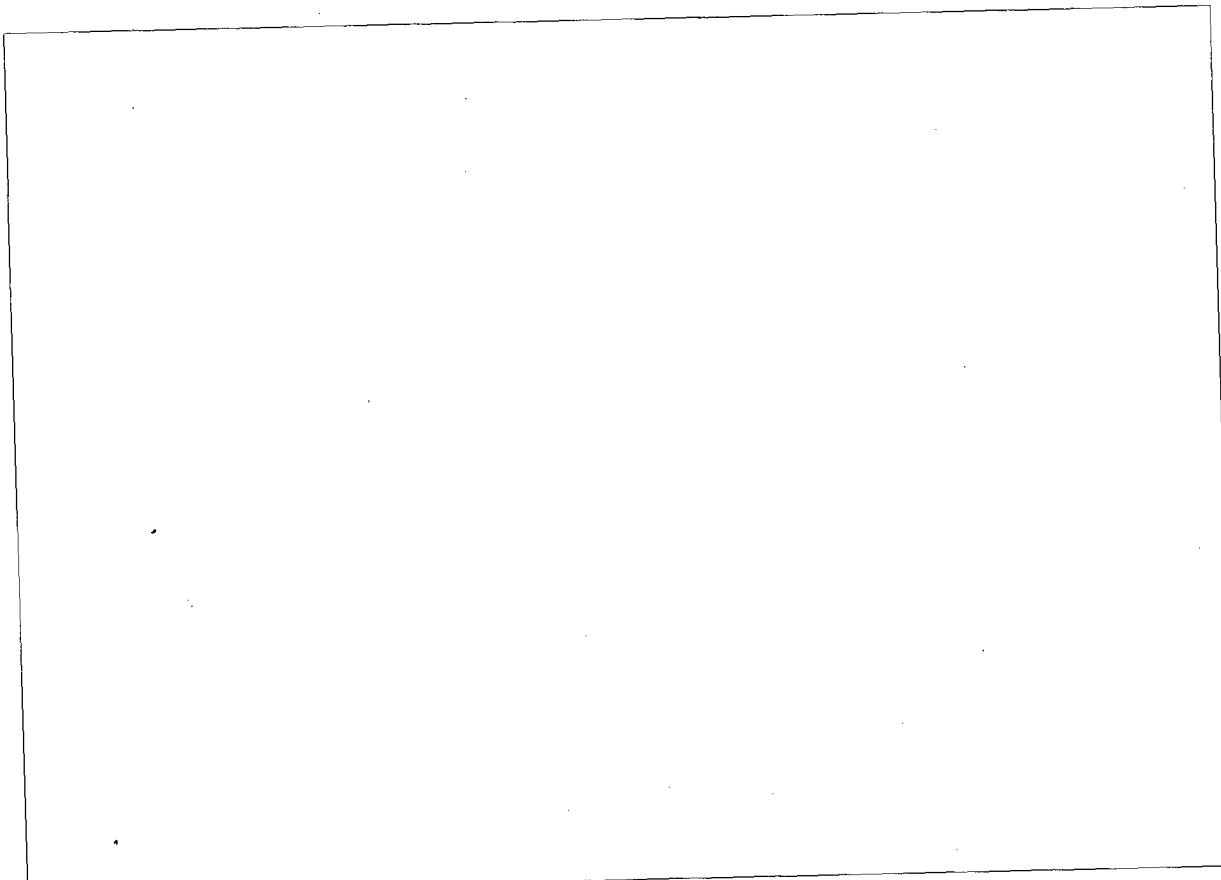


-  Estimated coverage for detection and tracking of new phased-array radars under construction
-  Coverage for detection and tracking of present early warning radars
-  Coverage for battle management of current radars in Moscow ABM system
-  Estimated coverage for battle management of new large ABM radar under construction at Moscow



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**Hen House Ballistic Missile  
Early Warning Radar**



*There are nine of these radars at six locations on the periphery of the USSR. They can provide 10 to 15 minutes warning of an ICBM attack on Moscow.*

**Strategic Defense Forces**

The Soviets have complemented their forces for strategic attack with a strong defensive effort designed to reduce damage from an enemy strategic attack. They have developed systems that can detect and destroy incoming intercontinental missiles and satellites in orbit and have tried to devise defenses against missile-launching submarines. The Soviets have also continued to emphasize measures, familiar from World War II,

for shooting down enemy bombers and protecting civilians. But despite the high priority of these strategic defense forces, they would be unable to prevent devastation of the USSR from a US nuclear strike.

Soviet programs for the detection of a ballistic missile attack were initiated in the mid-1950s, and the first ballistic missile early warning (BMEW) radars became operational in the mid-1960s. The Soviets now have a network of nine BMEW radars, which detect and track



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approaching missile weapons, and they are constructing four new radars that will improve and expand current coverage. They have also constructed three over-the-horizon (OTH) radars, two of which are focused on US missile complexes. Development of a satellite system for detecting missile launches started in the early 1960s. Despite difficulties, [ ] satellites are now operational, providing continuous coverage of US ICBM fields. [ ]

As a result of these programs, the Soviets now can receive some 15 to 30 minutes' warning of a US ICBM attack, depending on the performance of the OTH radars and of the satellite system. They probably consider this insufficient and are working to improve their launch-detection satellite system. They evidently intend to develop a nine-satellite network, which will provide more dependable coverage. [ ]

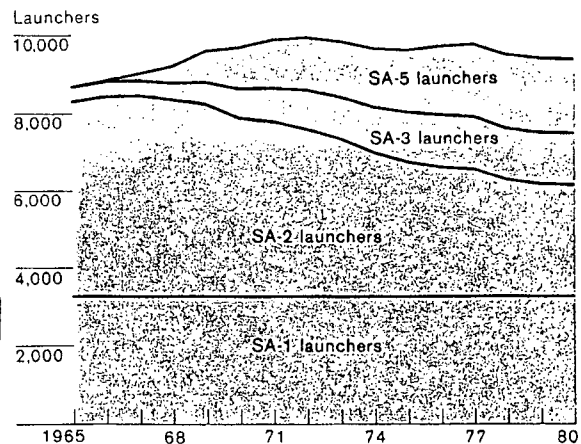
In addition to measures for detection, the Soviets have deployed around Moscow a limited antiballistic missile (ABM) defense. This system, which became operational in the late 1960s, consisted until mid-1979 of 64 aboveground launchers for antiballistic missiles, engagement radars to direct the missiles to their targets, and two battle management radars to assist commanders in assessing and controlling the combat situation. The battle management radars currently do not cover all of the sectors from which attacks could approach. The system's capabilities to counter a large-scale missile attack are poor—besides covering only a limited area, it must intercept missiles outside the atmosphere, where it is difficult to distinguish warheads from decoys and other objects. [ ]

The ABM Treaty of 1972 and the related Protocol of 1974 limited Soviet deployment to six ABM radar complexes and 100 launchers. The Soviets never deployed that many, but they have continued to fund research and development, and they apparently plan to upgrade the Moscow ABM system. In late 1979 they dismantled half the launchers, and recently they began to construct silo launchers, possibly for new types of missiles. They have also begun construction of a large radar near Moscow that we believe is intended to perform an ABM role—possibly battle management. [ ]

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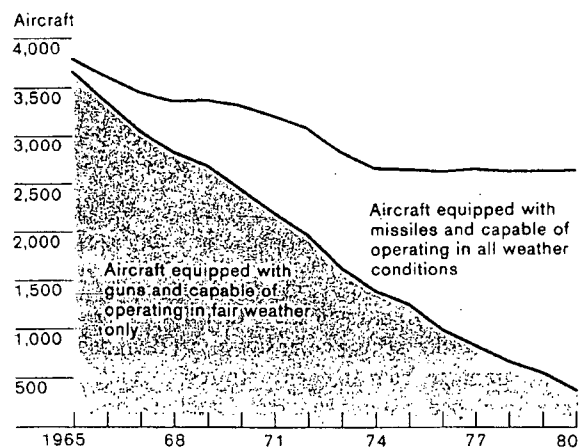
## Trends in Soviet Strategic Air Defense Forces

### Strategic Defense Surface-to-Air Missile Launchers



Another surface-to-air missile, the SA-10, became operational early in 1981.

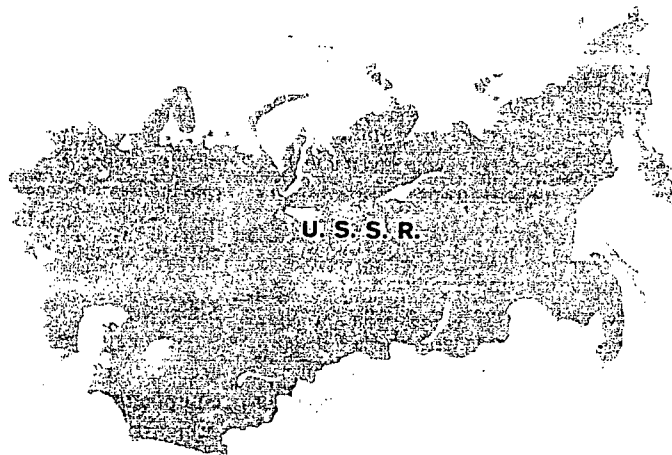
### Strategic Defense Interceptor Aircraft



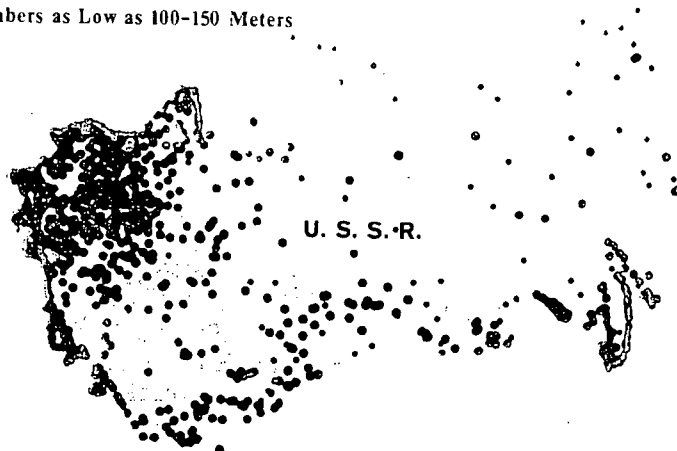
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# Soviet Air Defense Radar Coverage\*

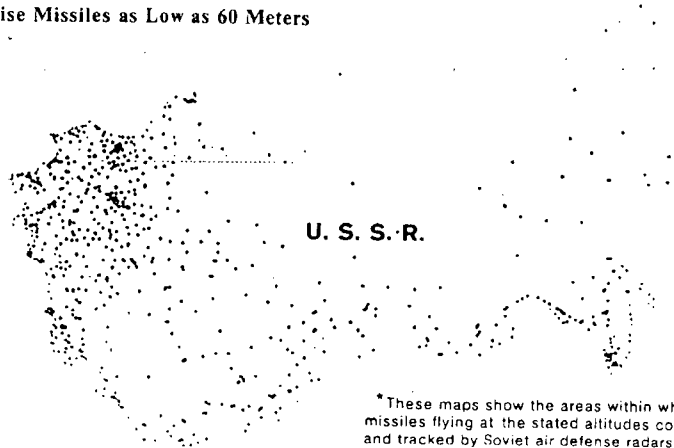
Bombers and Cruise Missiles at an Altitude of 10,000 Meters



Bombers as Low as 100-150 Meters



Cruise Missiles as Low as 60 Meters



\*These maps show the areas within which aircraft and missiles flying at the stated altitudes could be detected and tracked by Soviet air defense radars.

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The Soviet strategic air defense forces consist of surface-to-air missiles (SAMs) and interceptor aircraft intended for use against enemy cruise missiles and bombers. These forces have remained fairly stable in size since the mid-1960s. The number of SAM launchers increased in the late 1960s and early 1970s as the Soviets introduced the long-range SA-5 and enlarged their force of SA-3s. (The SA-3 missile has a short range but can engage targets at lower altitudes than the other currently deployed SAMs can.) In the mid-to-late 1970s the number of launchers decreased, as older sites were deactivated, and it now stands at about 9,500. Recently the Soviets began preparing to replace SA-1, SA-2, and SA-3 launchers with the SA-10, which is as useful as the early systems against high-altitude targets and has potentially better capabilities at low altitudes.

The number of strategic interceptor aircraft declined from the mid-1960s until the early 1970s, as the defensive missile force expanded. Their capabilities improved, however, as older aircraft were almost entirely replaced with missile-equipped, all-weather aircraft. Present Soviet air defenses would have good capabilities to defend against bombers at medium and high altitudes. They have major deficiencies in their ability to detect, track, and engage targets at low altitudes, but new systems now being deployed and others being tested offer the potential for improvement.

Recently the Soviets have begun to integrate the operation of strategic and tactical air defense forces. They have large tactical air defense forces (including more than 1,100 fighter-interceptors and about 1,800 mobile SAM launchers) that are stationed in the USSR during peacetime. Most of the mobile tactical SAMs have better capabilities against low-flying targets than the strategic SAMs do.

Soviet forces for defense against ballistic missile submarines include open-ocean naval surface ships, submarines, and antisubmarine warfare (ASW) aircraft. In the late 1950s the Navy was assigned a mission of defense against enemy missile submarines and began development of new weapon systems to counter the US threat. (In the mid-1960s Soviet naval officers cited ASW as one of the principal missions of general purpose naval forces.) The first forces specifically designed

for open-ocean ASW—the Moskva-class antisubmarine cruiser, the V-class nuclear-powered attack submarine, and the IL-38 May aircraft—became operational in the late 1960s, and by the early 1970s three new classes of large antisubmarine surface ships and a long-range ASW aircraft had been introduced. In the mid-to-late 1970s two more ships with this mission became operational: the Kiev-class antisubmarine aircraft carrier and the A-class submarine (a high-speed, deep-diving attack submarine that had entered development in the 1950s).

Since the mid-1970s the frequency and complexity of Soviet open-ocean ASW exercises have tended to increase. But despite this training effort and the new equipment, Soviet capabilities against ballistic missile submarines remain extremely limited.

The Soviets have also developed means of interfering with or even destroying US satellite systems. They have a nonnuclear interceptor satellite that can engage other satellites in near-Earth orbit. The missiles of the Moscow ABM system and some of the Soviets' surface-to-surface ballistic missiles could be used for direct nuclear attacks on satellites. The Soviets can use various means of electronic interference and are testing two ground-based lasers that might have antisatellite applications.

The Soviet civil defense effort is a nationwide program under military control. Its objectives are to protect the political leaders, the work force at key economic facilities, and the general population, in that order; to maintain the continuity of economic activity in wartime; and to enhance the country's capability for recovery from the effects of war. The effort to protect people has two major elements—shelter construction and evacuation.

Since the mid-1960s almost all facets of the civil defense program have improved. Construction of blast shelters probably increased in the late 1960s; we are uncertain about the pace since the mid-1970s, but it probably has leveled off. We judge that the Soviets have enough blast shelter space for virtually all political leaders, most of the essential work force, and over 10 percent of the urban population. They also have

## The ASW Problem

There are four basic tasks in antisubmarine operations—detection of an undersea target, identification of the target as an enemy submarine, location of the target, and weapon delivery. The most difficult of these, especially against submarines operating in the open ocean, is detection. The potential operating areas of Western ballistic missile submarines are very large—on the order of 3 million square nautical miles. Measured against this requirement, the search and detection capabilities of Soviet ASW forces are poor.

An alternative is to detect the submarines as they leave their bases or pass through choke points and to maintain contact until an attack is ordered. Because

the submarine commander can take countermeasures if he knows he is being trailed, this tactic is best conducted using passive sensors that do not reveal the tracker's presence. Soviet submarines, however, cannot trail US SSBNs by using passive sonars. Their passive acoustic sensors have only a limited ability to detect the quiet US submarines, and the Soviet submarines are so much noisier that they are themselves vulnerable to detection and countermeasures.

So far, the Soviet Navy has not achieved an adequate capability to counter Western SSBNs, and the task continues to have a high priority in Soviet naval planning.

## Search Capabilities of Current Soviet ASW Forces

Sensor and Platform Combination	Maximum Search Rate (sq. nm/hr)	Number of Platforms (ship or aircraft)	Aggregate Search Rate (sq. nm/hr)	Days Required To Search 3 Million Square Nautical Miles
Active sonar on surface ships				
3/4.5 kHz	Up to 600	4	2,400	52
8/9 kHz	75	56	4,200	30
Variable-depth sonar	100	40	4,000	31
Dipping sonar on helicopters or surface ships				
Grisha-class light frigate	425	38	16,150	8
Hormone helicopter	120	110 <sup>a</sup>	13,200	9
Sonobuoys on fixed-wing aircraft	200	100 <sup>b</sup>	20,000	6
Magnetic anomaly detector on aircraft	100	60 <sup>c</sup>	6,000	21

<sup>a</sup> The total number of Ka-25/Hormone A helicopters deployable on Soviet combat surface ships (with the usual mix of aircraft types in the case of the Kiev-class ships).

<sup>b</sup> This is the approximate number of IL-38 medium-range and Tu-142 long-range land-based ASW aircraft.

<sup>c</sup> This is the approximate number of IL-38 aircraft.

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evacuation plans for about 90 percent of the population in some 300 cities—a total of about 85 million evacuees. ☐

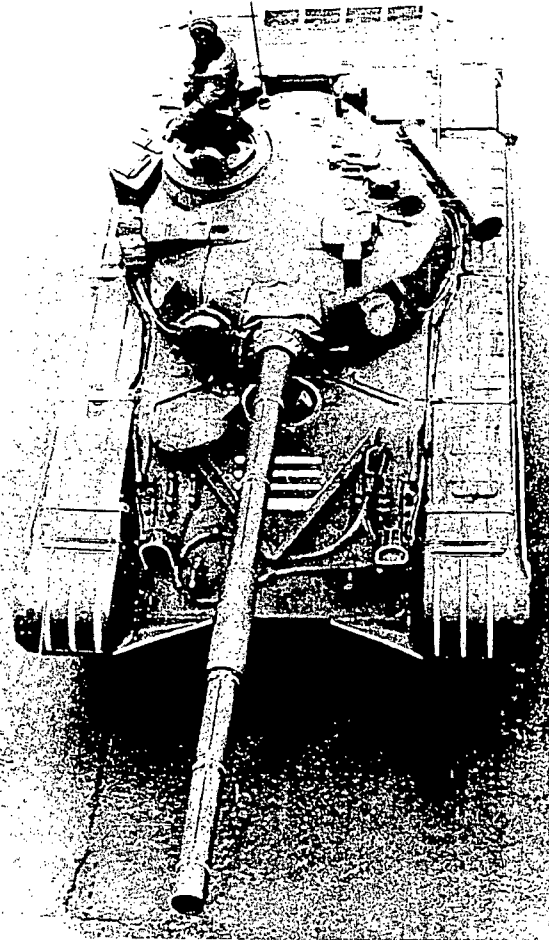
The effectiveness of these measures in reducing casualties would depend on the time available for final preparations. Complete implementation of all the plans would assure survival of most of the political leaders and essential workers and could reduce by some 80-100 million the immediate casualties in the aftermath of large-scale US attack. But even with full implementation, civil defense could not prevent tens of millions of casualties and extensive damage to economic and military facilities in the USSR. ☐

#### **Ground Forces and Tactical Air Forces**

The development of Soviet theater forces since the mid-1960s has emphasized capabilities for conventional conflict. The Soviets have retained their quantitative advantage over the West in standing forces and have narrowed the qualitative gap in conventional weapons. Expansion of the Ground Forces and modernization of their equipment have increased the ability of Soviet divisions to operate as self-sustaining units, to defend against air and antiarmor systems, and to respond quickly to changing tactical situations. Increases in the numbers of fixed-wing tactical aircraft and helicopters have improved Soviet capabilities to conduct conventional strikes deep in the rear areas of a combat zone and to carry out close support of ground forces. Many Soviet ground force units still lack modern equipment, however, and the tactical air forces are inferior in quality to NATO's and would have difficulty in contesting for air superiority. ☐

The Soviet Ground Forces and Frontal (tactical) Aviation forces were the primary beneficiaries of the Sino-Soviet political rift and the doctrinal shift that reemphasized the possibility of large-scale conventional war. To meet these requirements, the Soviets first expanded and then rapidly modernized their theater forces. Ground Forces manpower increased by nearly 50 percent between 1965 and 1980. The number of men in each full-strength tank and motorized rifle division increased by about 20 percent, to some 9,500 and 12,000, respectively. About half of the increase in ground forces manpower resulted from a buildup along

#### **The T-72 Tank**



*The T-72 was introduced in 1974. It has advanced laminated armor and a 125-mm smoothbore gun with an automatic loader.*

☐ the Sino-Soviet border, where the number of divisions has doubled and manpower more than tripled since the late 1960s. ☐

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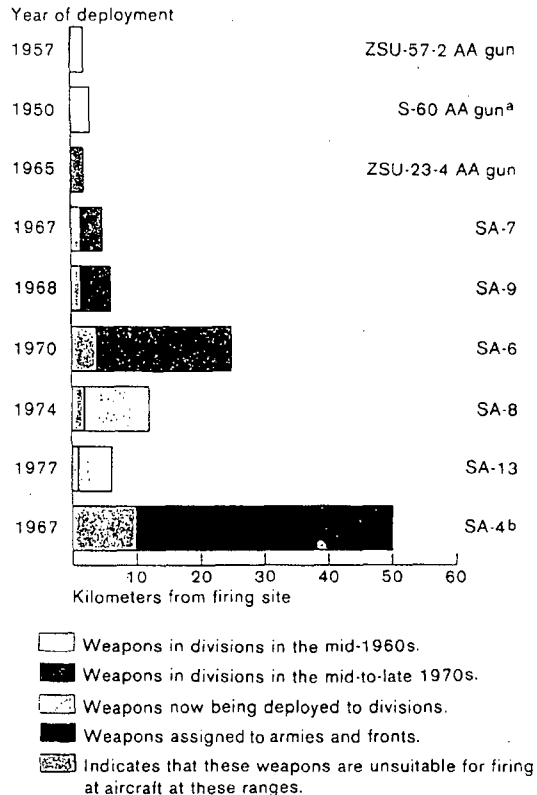
## The Battlefield Air Defense Environment

One of the most rapidly changing aspects of the modern battlefield has been the increasing number, variety, and capability of systems that tactical commanders have available for defense against enemy aircraft. Soviet Ground Force commanders receive air defense support not only from interceptor aircraft assigned to Frontal Aviation, but also from their own air defense units. Since the mid-1960s the Soviets have steadily upgraded the air defense systems directly available to ground force commanders.

In the mid-1960s the only mobile air defense weapons in ground forces divisions were short-range guns. In the late 1960s the SA-4, a mobile long-range SAM, was introduced at the front<sup>a</sup> and army levels, and short-range man-portable and vehicle-mounted SAMs were fielded with divisions. In the early 1970s, divisional air defense capabilities received a major improvement with widespread deployment of a mobile, medium-range SAM, the SA-6. Each Soviet tank and motorized rifle division now typically has 20 launch vehicles for this system, which has a range of 25 kilometers. In the mid-1970s the Soviets began to deploy the SA-8 mobile SAM, which operates in a range bracket between that of the SA-6 and the short-range SAMs. About one out of every 10 divisions has this missile. The Soviets have fielded another short-range missile, the SA-13, and are developing other, more capable air defense systems.

<sup>a</sup> In Warsaw Pact terminology, a front is a joint forces command, roughly analogous to a US Army group, consisting of ground and air forces, combat support elements, and sometimes naval forces.

### Firing Zones of Soviet Tactical Antiaircraft Weapons



<sup>a</sup> Some divisions still have the S-60.  
<sup>b</sup> There is disagreement in the Intelligence Community over whether the maximum range of the SA-4 is 50 or 80 kilometers.

To support the expansion of the Ground Forces in the late 1960s, the Soviets initially increased the production of existing weapons—the T-62 tank, for example—but introduced few new ones. One major innovation in the 1960s, however, was formation of the nucleus of a highly mobile air defense system.

In the 1970s new and increasingly sophisticated weapons began to enter the Ground Forces. These new

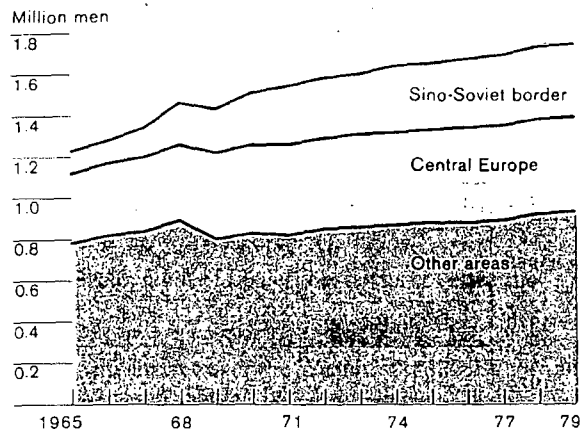
systems emphasized mobility, firepower, and survivability in nonnuclear conflict. Nearly all of the Soviet units in Eastern Europe are equipped with these weapons, but many in the USSR still have the older systems.

The Soviets introduced the T-64 and T-72, new tanks that require fewer crew members than earlier tanks and have larger caliber main guns with longer ranges

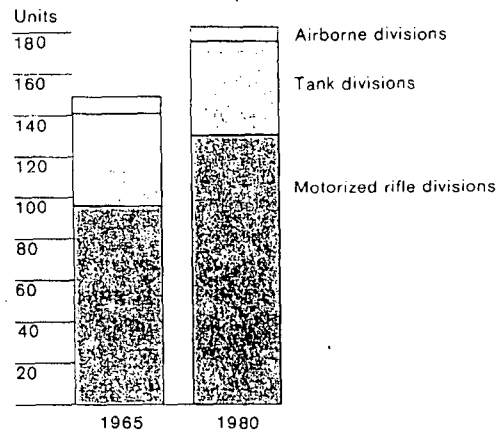
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## Trends in Soviet Ground Forces

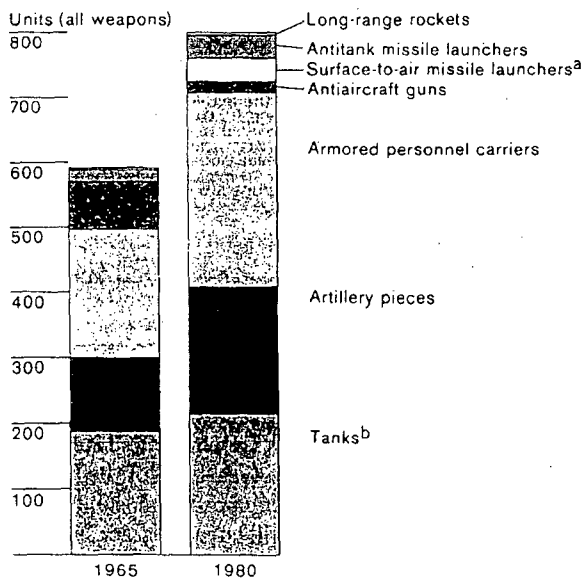
### Ground Forces Manpower



### Ground Forces Divisions



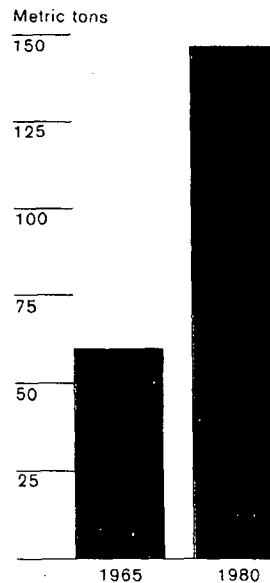
### Major Weapons in a First-Line Motorized Rifle Division



<sup>a</sup>Excludes man-portable launchers.

<sup>b</sup>In 1980, some motorized rifle divisions had 40 tanks more than the number shown here.

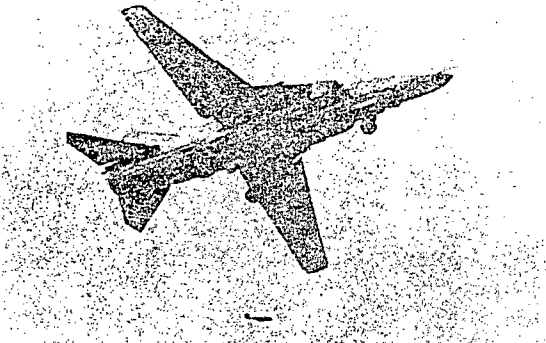
### Firepower of a First-Line Motorized Rifle Division<sup>c</sup>



<sup>c</sup>Firepower is calculated as the weight of ordnance deliverable by divisional artillery in a three-minute surge.

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## The MIG-27 Flogger D Ground Attack Aircraft



*Flogger is the most costly Soviet military procurement program of the last 15 years.*

and automatic loaders to increase firing rates. These tanks have laminated armor (which is more difficult to penetrate than an equal weight of the earlier rolled or cast homogeneous steel) and antiradiation liners to protect against nuclear contamination. The Soviets also upgraded their capabilities against enemy armored forces by fielding four new antitank guided missiles (and three modifications of earlier missiles) with improved range, guidance, and armor-piercing ability. ☐

Four new Soviet self-propelled artillery systems were introduced in the 1970s. (The United States fielded such systems in the early 1960s.) Two of these can fire nuclear rounds, but their principal advantages are high rates of fire for conventional munitions, crew compartments armored against conventional attack, and mobility that enables them to accompany rapidly advancing mechanized forces. ☐

The Soviets reorganized their Ground Forces between the mid-1960s and the mid-1970s to improve firepower and capabilities for combined arms operations. The motorized rifle division of the late 1970s, for example,

had about one-third more major weapons than that of the late 1960s. The added weapons had higher rates of fire than their predecessors, for a sharp increase in the amount of firepower that could be delivered per minute. ☐

In the late 1960s the Soviets also expanded their tactical air forces, primarily those units opposite China. In the 1970s they began a major reequipment program, first for fighter-interceptor units and later for fighter-bomber units. The new fighter programs upgraded and improved the capabilities of the armed forces to defend themselves and their facilities. The Soviets introduced the Flogger (a new fighter-interceptor with much more capable air-to-air missiles, greater speed and range, and a more advanced system for detecting and tracking targets) and upgraded the Fishbed. These two aircraft now make up the entire tactical fighter-interceptor force. The force has good capabilities against aircraft at medium and high altitudes. Like the strategic air defense force, however, it has only a limited (but improving) capability against low-flying aircraft. ☐

Modernization of the fighter-bomber force stemmed from the Soviets' perception that, if a war in Europe began with only conventional forces, one of their first goals would be to improve the position of their forces for an eventual nuclear exchange. Consequently, since the late 1960s a main task of the tactical air forces in the early phase of conflict has been to conduct a large-scale, theaterwide, conventional air offensive aimed at destroying NATO's nuclear delivery vehicles and weapons. ☐

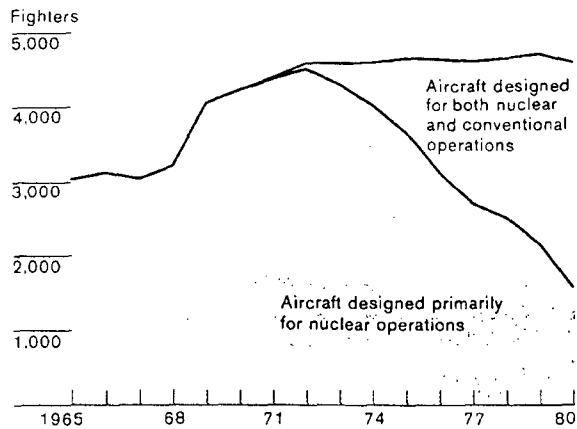
Development programs were begun in the mid-1960s to improve these capabilities, and the new aircraft were fielded in the mid-1970s. These aircraft—Fencer, a ground attack version of the Flogger, and late models of the Fitter—have greater ranges, can carry larger payloads, are equipped with more advanced avionics, and are armed with more accurate and effective munitions than their predecessors. As a result of these improvements, tactical aircraft can today deliver deep in NATO's rear areas about nine times as much ordnance as they could in the mid-1960s. ☐



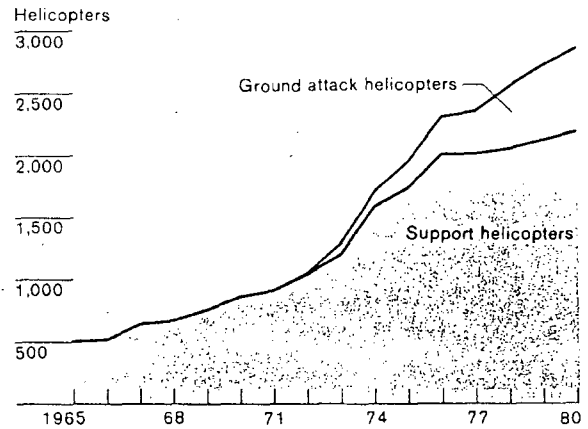
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## Trends in Soviet Tactical Aviation Forces

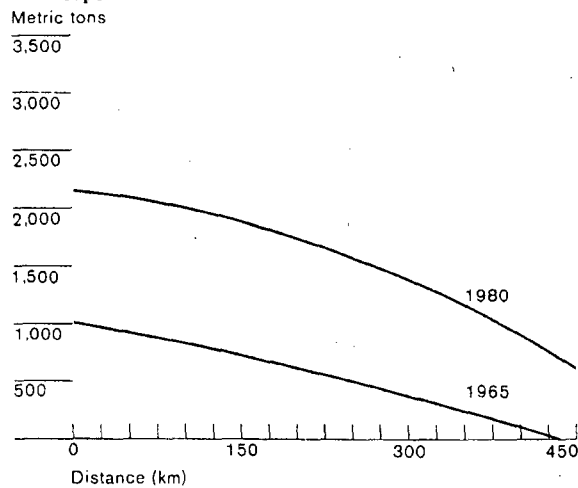
### Frontal Aviation Fighter Aircraft



### Combat and Support Helicopters



### Payload That Soviet Tactical Aircraft Could Deliver, in Europe<sup>a</sup>



<sup>a</sup>This shows the maximum weight of weapons (missiles or bombs) deliverable in one sortie, as a function of distance. A sortie is assumed to include all of the Soviet tactical aircraft in Central Europe.

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Soviet ground attack aircraft of the 1960s were limited to relatively inaccurate visual bombing, but new navigation and weapon delivery systems of the 1970s improved the accuracy of bomb attacks. The Soviets also began to introduce more accurate tactical air-to-surface missiles. At least four are now operational: the AS-7 and AS-10 require guidance from the launching aircraft or another platform, but the AS-9 and AS-11 home on radar emissions from the target. The Soviets have begun to deploy a laser-guided bomb. [ ]

Complementing the improvements in Frontal Aviation has been the upgrading of Long-Range Aviation's bomber component for peripheral attack, especially through the introduction of the Backfire. The Backfire, which entered development in the mid-1960s, is well suited for the Soviet concept of conventional air operations, as well as for nuclear strikes. It has a better capability than the earlier Badger and Blinder bombers to penetrate air defenses. [ ]

Another major trend in Soviet theater air forces has been the introduction of large numbers of combat and support helicopters. In 1965 the theater forces' only rotary-wing aircraft were a few hundred support helicopters. The Soviets introduced their first attack helicopter in 1972, and by the end of 1980 they had nearly six times as many helicopters in the forces as in 1965. About 30 percent of these are heavily armed ground attack helicopters. [ ]

In modernizing their theater forces, the Soviets have also improved their capabilities to sustain combat operations. The capability of Soviet divisions to move petroleum, oil, and lubricants (POL) and other cargo was enhanced by the introduction of more and newer vehicles. The Soviets have extensive plans for mobilizing their economy in the event of war, and they maintain large stockpiles of war materiel, but we do not know how effective these plans would be or how large the stockpiles are. [ ]

The Soviets have upgraded their electronic warfare systems since the late 1960s, improving the capabilities of their theater air and air defense forces to disrupt NATO communications and sensors. To weaken NATO's defenses against air attack, they have deployed specially equipped aircraft and have installed

jamming equipment in pods on attack aircraft. To strengthen their own defenses, they have increased the resistance of their air defense radars to jamming and their capabilities to disrupt the target acquisition and navigation radars on NATO aircraft. In the mid-1970s the Soviets began to introduce new electronic warfare equipment in the Ground Forces and to field additional jamming units to support front and army commands. [ ]

Soviet battlefield reconnaissance was reorganized and reequipped during the 1970s to support warfare in Europe. (Poor reconnaissance constrained Soviet military capabilities through the early 1970s—the range and mobility of NATO weapon systems, particularly the Pershing missile, far outstripped the Soviet ability to monitor and target them.) New equipment, particularly for aerial reconnaissance, was introduced to complement the introduction of longer range strike systems and to increase the capacity and speed of collection. [ ]

The Soviet theater forces are well equipped and trained to operate in a chemical, biological, or radiological environment. Many Soviet surface-to-surface missiles, rockets, and artillery systems can be fitted with a chemical warhead. These systems could deliver chemical agents in the combat zone, and aircraft could deliver them against such targets as enemy nuclear delivery systems. The Soviets have produced or are capable of producing a range of chemical agents, but we cannot estimate the size of possible stockpiles. We are aware of Soviet research related to biological warfare, but have no evidence of a weapon program. [ ]

#### **The Role of Non-Soviet Warsaw Pact Forces**

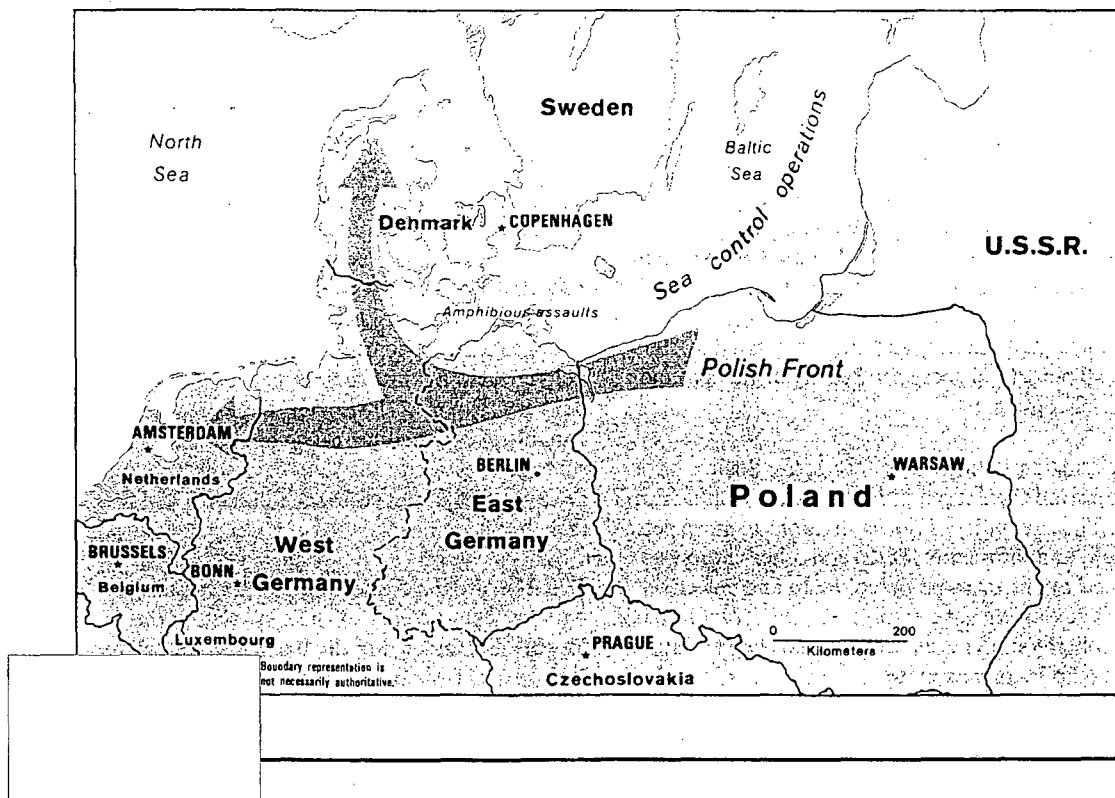
Another consequence of the evolution of the doctrine for theater war during the Brezhnev era has been a change in the planning for initial military operations in Central Europe. The strategy of the early 1960s called for an initial attack primarily by Soviet forces, most of which were to be moved forward from the Western USSR prior to hostilities. By the end of the 1960s the predominant Soviet plan assumed that the Warsaw Pact allies would contribute as much as half the divisions necessary for initial operations against NATO; it treated forces moved forward from the USSR as a second echelon. This plan requires less time to prepare

## The Wartime Role of Polish Forces

Since the Soviets altered their concept for war in Europe (in the mid-to-late 1960s), Warsaw Pact planning for war against NATO has assigned an important role to Polish forces. These forces are expected to form a front (army group) of some 15 divisions, which would be responsible for operations in the northern area of NATO's central region, as well as in Denmark. Poland's naval forces and "Sea Landing Division" are to assist the Soviet Baltic Fleet with sea control operations and to participate in amphibious assaults.

Polish forces are also assigned the critical tasks of operating and safeguarding the lines of communication from the USSR through Poland.

Soviet military planners must have reservations about the reliability of Polish forces in wartime, and they probably have contingency plans that exclude them or assign them less critical tasks. Nevertheless, it would be difficult for Soviet units to replace the Poles completely without endangering vital wartime objectives.



for operations but places a heavy premium on participation by the allies—and has required that their capabilities be upgraded.

At Soviet insistence, most of the non-Soviet Warsaw Pact countries have been expanding or modernizing their military forces to meet these new requirements, though the effort has varied considerably from one to another and over time. The manpower of non-Soviet ground forces in Central Europe increased by about 15

percent over the past decade, to nearly half a million men. The Pact ground forces' equipment mix is more highly standardized than NATO's, consisting primarily of Soviet weapons. The holdings of non-Soviet armies are less modern than those of Soviet forces in Eastern Europe, however. They are still armed principally with the T-54 and T-55 tanks, for example, which were introduced into Soviet forces in the 1950s.

In recent years, most Pact countries have acquired some modern Soviet weapons, including T-72 tanks and SA-6 SAMs. Czechoslovakia has a wide range of equipment, including some modern tanks and infantry combat vehicles, SAMs, and late-model aircraft. The East German armed forces have new tanks and armored vehicles, air defense systems, self-propelled artillery, naval patrol and minesweeping ships, and Flogger aircraft. In Poland, modernization was confined to the ground and air forces; troop air defense was improved, and armor holdings were upgraded. (Poland and Czechoslovakia also have sizable domestic arms industries.) Hungary acquired some T-72 tanks, new Soviet-produced SAMs, and anti-aircraft guns. Romania purchased interceptor aircraft and a few T-72 tanks from the USSR and also stepped up production of domestically designed weapons. In Bulgaria there was some modernization of the air and air defense forces, but overall the rate of introduction of new systems was slow.

#### Theater Nuclear Forces

Since the mid-1960s, the NATO strategy of flexible response has posed a dilemma for Soviet planners. If Soviet forces were successful in the conventional period of a war, NATO planned to escalate to theater nuclear strikes. For this purpose, NATO held a nearly 2-to-1 advantage in the number of nuclear delivery systems based in Central Europe, as well as a qualitative edge.

Although the Soviets—then as now—held large numbers of long-range peripheral strategic delivery vehicles that could offset the NATO tactical advantage, these were based in the USSR, and Soviet planners probably feared that their use would invite nuclear attacks on Soviet territory. In the 1970s, therefore, the Soviets began to expand and modernize tactical nu-

clear forces that could be based in Central Europe. Among the most important changes were:

- Increases in force size: the number of tactical surface-to-surface missile launchers in Central Europe increased by more than 30 percent, and the number of aircraft capable of delivering nuclear weapons there increased by more than 200 percent.<sup>6</sup>
- Improvements in the range and accuracy of nuclear delivery systems and in their readiness.
- An increase in the number of nuclear weapons available to forces in Central Europe.
- The introduction of nuclear-capable artillery. (Soviet Ground Forces units in the USSR have these guns, but they are not yet deployed in Central Europe.)

The Soviets have also been improving theater strike forces based in the USSR with a new missile and a new aircraft. In the Strategic Rocket Forces, they are replacing the older SS-4 (medium-range) and SS-5 (intermediate-range) ballistic missiles with the mobile SS-20 system. The SS-20 has three independently targetable warheads, increasing the number of targets that can be attacked, and its mobility makes it difficult to locate and attack. The Soviets are also replacing the Air Forces' Badger and Blinder bombers with the Backfire. This aircraft is well suited for peripheral strikes and offers payload and penetration capabilities better than those of its predecessors.

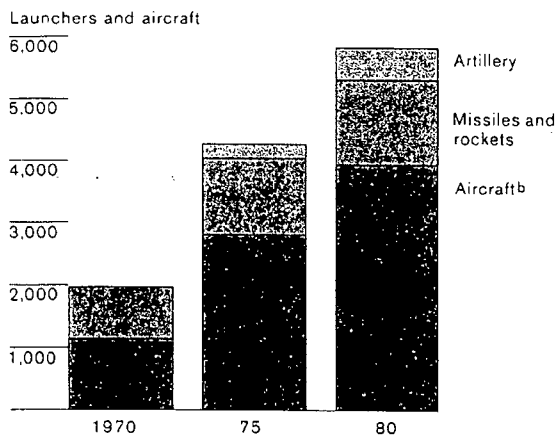
As the Soviets have expanded and improved their theater nuclear forces, they have also developed new concepts for their employment. The doctrine of the early 1960s called for theater nuclear strikes on a massive scale, to be delivered at the same time as intercontinental nuclear exchanges; this was modified in the late 1960s, as the Soviets experimented with new targeting schemes and the possibility of limited nuclear strikes. Soviet military doctrine became even more flexible during the 1970s and now apparently includes options ranging from massive, theaterwide, preemptive strikes to delayed and limited responses to NATO

<sup>6</sup> This accounting includes aircraft with characteristics that make them suitable for delivery of nuclear weapons, even though not all aircrews are trained for that mission.

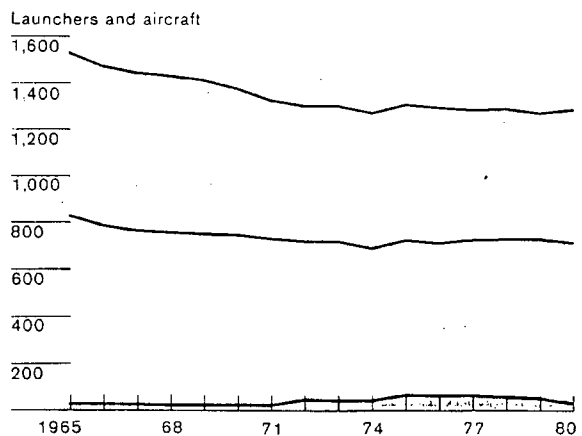
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## Trends in Soviet Theater Nuclear Forces<sup>a</sup>

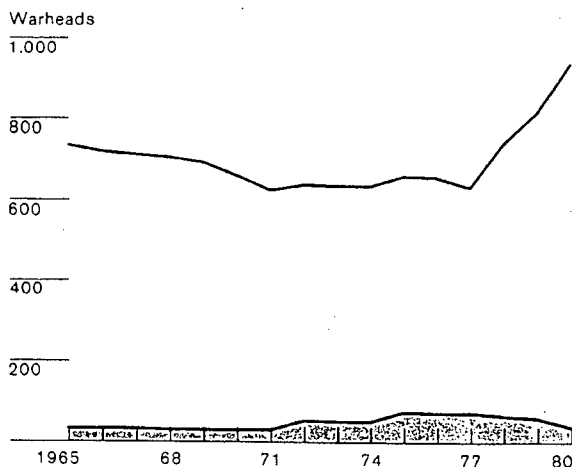
### Tactical Nuclear Delivery Vehicles



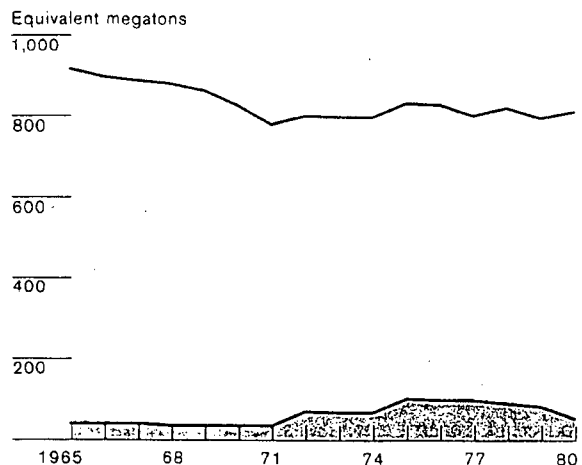
### Peripheral Strategic Delivery Vehicles



### Warheads on Peripheral Attack Missiles



### On-Line Equivalent Megatonnage for Peripheral Attack<sup>c</sup>



<sup>a</sup>Excludes ICBMs that can be used against targets in Europe and Asia.

<sup>b</sup>Includes all aircraft technically capable of delivering nuclear weapons, even though not all of the aircrews are trained for that mission.

<sup>c</sup>Equivalent megatonnage is a rough measure of the theoretical capabilities of nuclear weapons to attack soft area targets. The equivalent megatonnage of a weapon is equal to weapon yield raised to the two-thirds power for weapons of less than one megaton or to the square root of the yield if greater than one megaton.

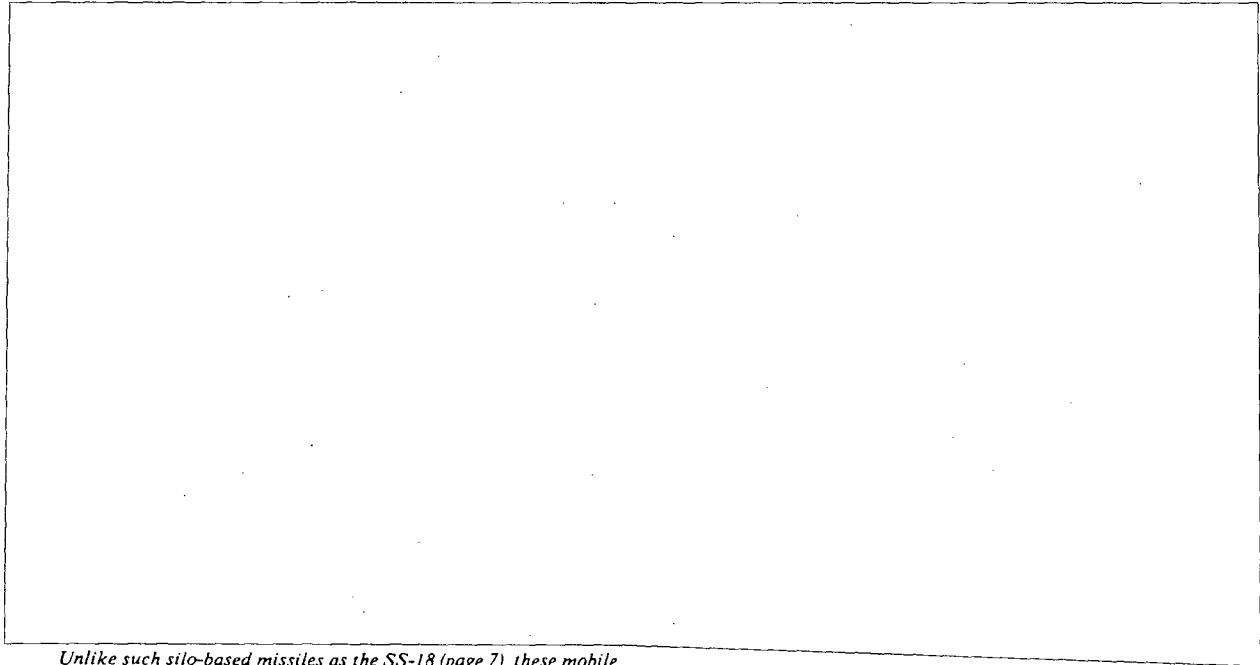
<sup>d</sup>Includes some bomber-type aircraft currently configured for reconnaissance and electronic warfare. Excludes bombers in Naval Aviation intended for strikes against ships at sea.

- MRBMs and IRBMs
- Bombers<sup>d</sup>
- SLBMs

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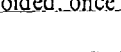
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## An Operating Base for the SS-20 Mobile IRBM

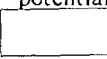


*Unlike such silo-based missiles as the SS-18 (page 7), these mobile missiles can be deployed to field sites for protection from enemy attack, given sufficient warning. We estimate the number of SS-20 launchers at each base by identifying the buildings where the launchers are stored when not deployed in the field. (These are circled in the photograph.) There is uncertainty in this estimate, because additional launchers may be dispersed to other locations. Consequently our confidence in monitoring deployment of these mobile missiles is lower than for fixed, silo-based missiles.*



nuclear attacks. But the Soviets still doubt that escalation to widespread nuclear war can be avoided, once either side has used any nuclear weapon. 

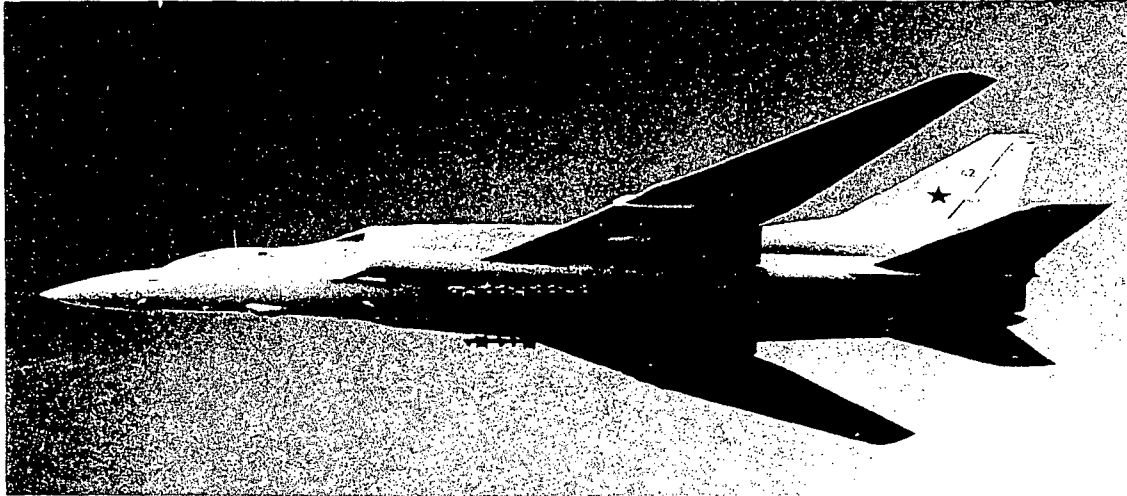
With the recent improvements in their tactical nuclear forces, Soviet leaders probably now consider that they have decreased the military advantages to NATO of using nuclear weapons and that the Alliance would be reluctant to use them to balance its weaknesses in conventional forces. In a military sense, the Soviets probably see growth of their tactical nuclear forces as reducing the credibility, and therefore the utility, of NATO's theater nuclear weapons as a counter to the

Pact's conventional strength. In a political sense, they probably see it as reducing the credibility of the US contribution to European security—and therefore potentially reducing the cohesiveness of the Alliance. 

### General Purpose Naval Forces

Fifteen years ago the Soviet Navy was primarily a coastal defense force with limited capabilities for operation in the open ocean; now it is a major branch of the military with heavily armed surface ships, high-speed nuclear-powered submarines, and improved land- and sea-based aircraft. The transformation gives the

## The Backfire Bomber



*The Backfire was first introduced in 1974 to replace older Badger and Blinder intermediate-range bombers. It is deployed with Long Range Aviation for strikes against targets in Eurasia and with Naval Aviation for attacks against ships at sea.*

USSR a general purpose navy with capabilities for both conventional and nuclear war—a counter to the previously unconstrained Western use of the seas ☐

The number of ships in the Soviet Navy has changed little, but the composition of the forces has changed as older, short-range ships and submarines are retired and replaced by larger and more capable units. The ships remain vulnerable, however, to air and submarine attack. The nuclear-powered submarines are noisier (and thus easier to detect) than their Western counterparts. The Navy lacks the types of sea-based aircraft required for defending its ships from air attack, so that in wartime the surface forces would be required to stay within the range of land-based aircraft. Moreover, the Soviet Navy's capabilities for sustained combat are limited. ☐

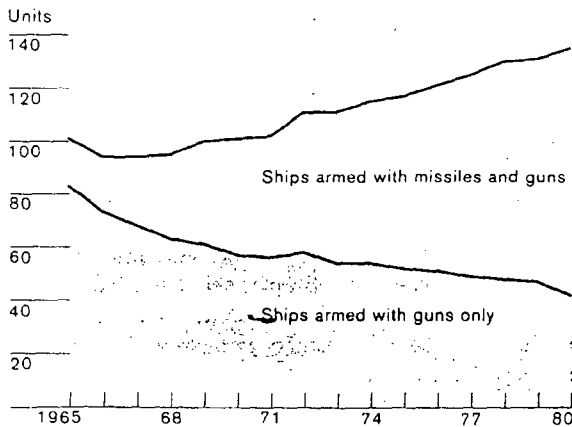
The number of large surface combatants (those with displacements of 3,000 tons or more) has increased by about 40 percent since 1965, and nearly two-thirds of them are equipped with missiles. The general purpose submarine force decreased in size, but nuclear-powered units increased from one-tenth to more than one-third of the force.<sup>7</sup> The number of naval fixed-wing aircraft and helicopters increased rapidly, especially in the late 1960s. ☐

The doctrinal changes of the 1960s, which recognized the possibility of having to fight a conventional period of war, obliged the Navy to develop more flexible forces with greater endurance and improved survivability. These forces are expected to engage enemy forces with conventional weapons in the open ocean,

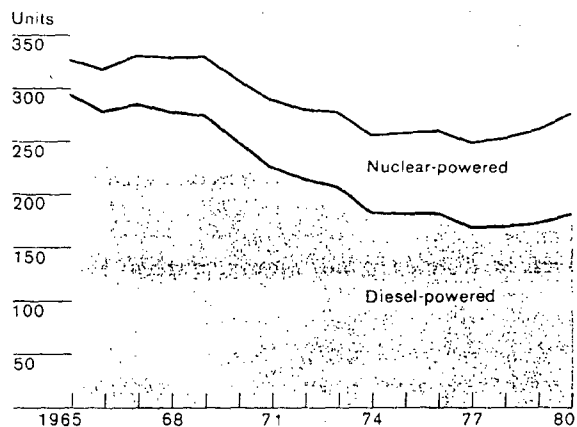
<sup>7</sup> Ballistic missile submarines are considered to be part of the strategic and theater nuclear forces (see pages 7 and 22) and are not counted here. ☐

## Trends in Soviet General Purpose Naval Forces

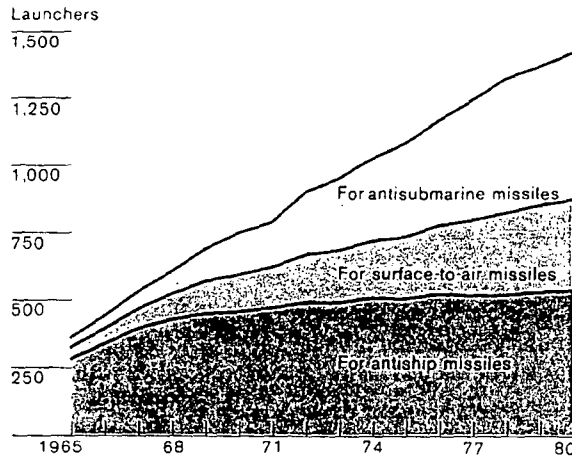
### Large Surface Combatants



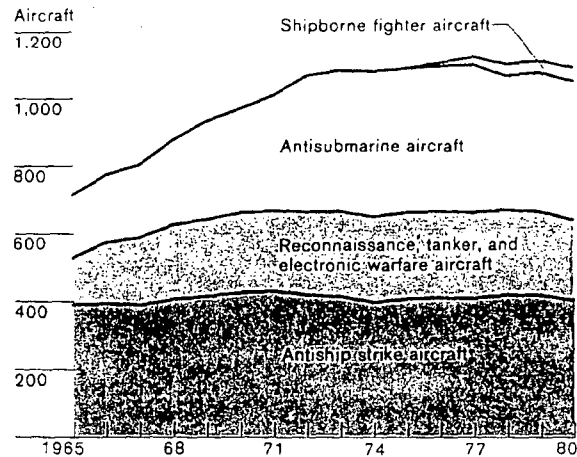
### General Purpose Submarines



### Missile Launchers on Large Surface Combatants and Submarines



### Naval Aircraft<sup>a</sup>



<sup>a</sup> The figures for antisubmarine and reconnaissance aircraft include some helicopters that can be carried on ships. All other Soviet naval aircraft, except shipborne fighters, are land-based.

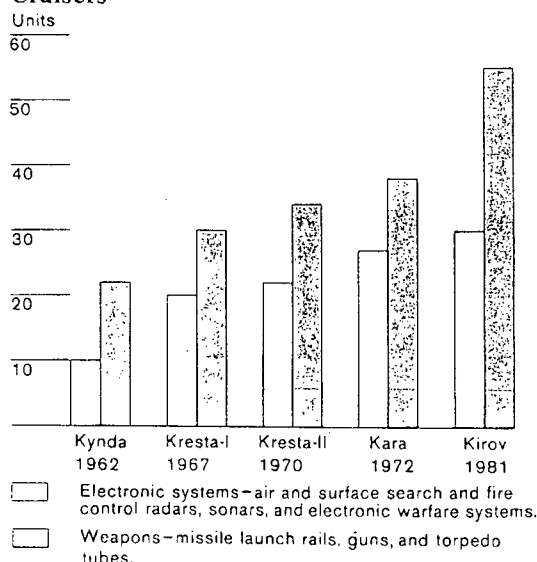


# **Soviet Priorities in the Design of Large Surface Combatant Ships**

*To meet the varied demands of the military planners, Soviet surface combatant ship designers emphasize large numbers of weapons and sensors and high speeds. The number of guns, missile launch rails, and electronic systems on Soviet cruisers, for example, has increased with each new class introduced since the early 1960s. Moreover, the number of weapons that each new ship can deliver has increased even more rapidly, because the newer units have launchers that can be reloaded. The size of the ships has also increased, but even so their maximum speeds have remained high—over 30 knots.*

*The designers have paid more attention to these matters than to provisions for crew comfort and the ease with which equipment can be maintained. Maintenance and crew conditions, however, are factors that limit the capabilities of Soviet ships for sustained peacetime or wartime operations.*

**Weapons and Electronic Systems on Soviet Cruisers**



survive a period of conventional war, and carry enough nuclear weapons to conduct decisive strikes if the conflict escalates. [ ]

To achieve these capabilities, the Soviets emphasized missile-carrying aircraft, surface ships, and submarines, as well as balanced ASW forces also consisting of air, surface, and undersea platforms. They constructed surface combatants that are heavily armed with antisubmarine weapons (and in some cases antiship missiles) and also carry SAMs for protection against air attack when operating outside land-based fighter cover. Recently the Soviets commissioned their first nuclear-powered surface combatant, the Kirov-class cruiser (page 28). They began to deploy aircraft on ships: ASW helicopters on destroyers, cruisers, and the two Moskva-class helicopter ships; and fixed-wing aircraft on the two Kiev-class carriers. They introduced the Backfire bomber into Naval Aviation, increasing the capabilities of the force to attack targets at greater distances and to penetrate air defenses. The ASW and reconnaissance capabilities of the Navy were improved by the deployment of modified versions of the long-range Bear bomber and by the introduction of satellite ocean surveillance systems. [ ]

Submarine forces were improved by the introduction of new nuclear-powered classes. These were faster, deeper diving, and quieter than the first nuclear-powered submarines but still behind Western submarines in quietness and sensor capabilities. Many were equipped with antiship or antisubmarine missiles. [ ]

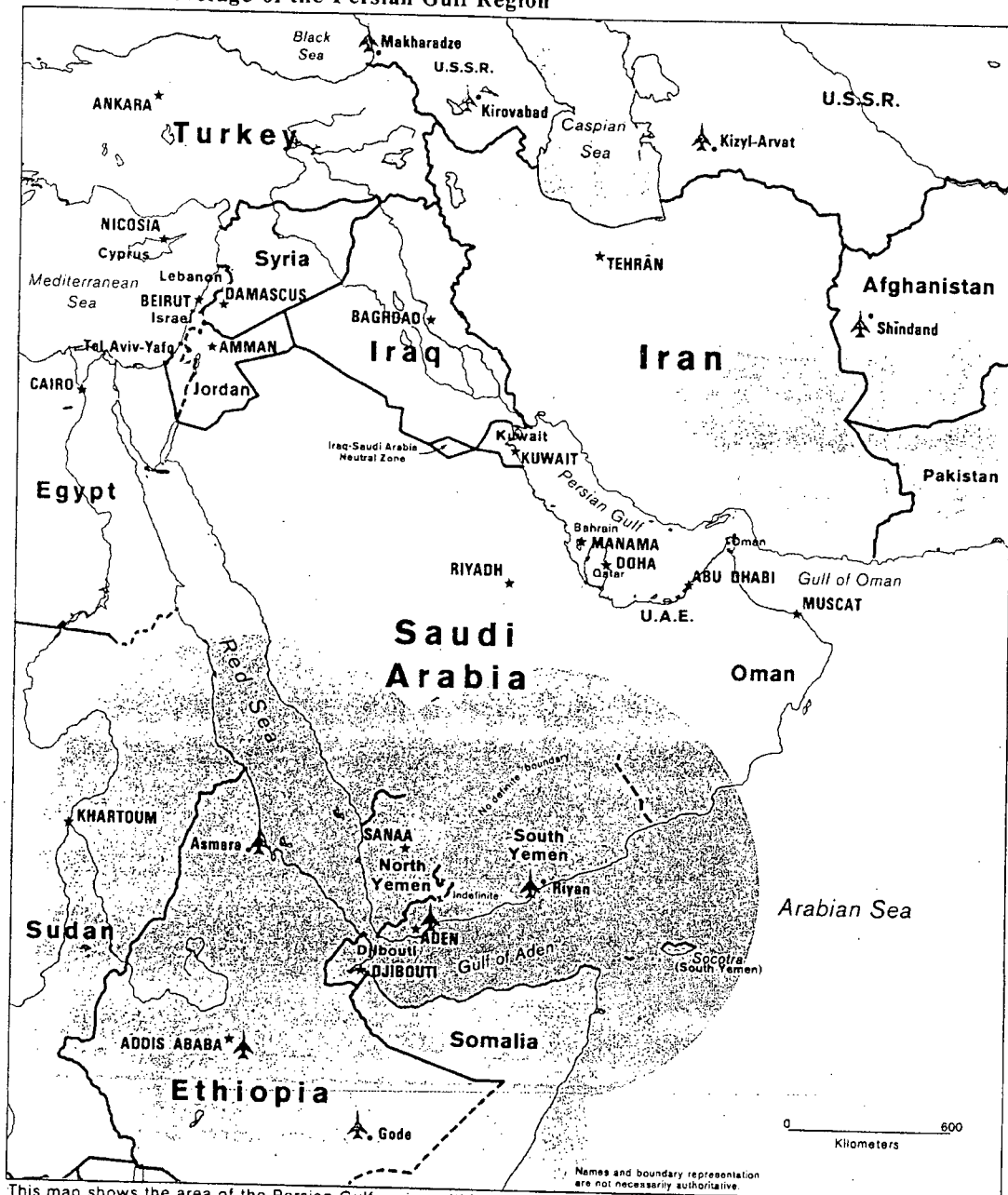
## **Power Projection Forces**

The Soviet Union has improved its ability to project military power and influence abroad, even though it has not developed many forces specifically for that purpose. Its capabilities for distant combat operations are limited in comparison to those of the United States, but are similar to those of the United Kingdom and France. A significant limitation is that—even with access to overseas airfields—the air forces cannot provide support for Soviet forces in many Third World areas. [ ]

The improvements have resulted primarily from the Soviets' procurement of general purpose forces that are designed for use in a continental war but are also

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### Tactical Air Coverage of the Persian Gulf Region

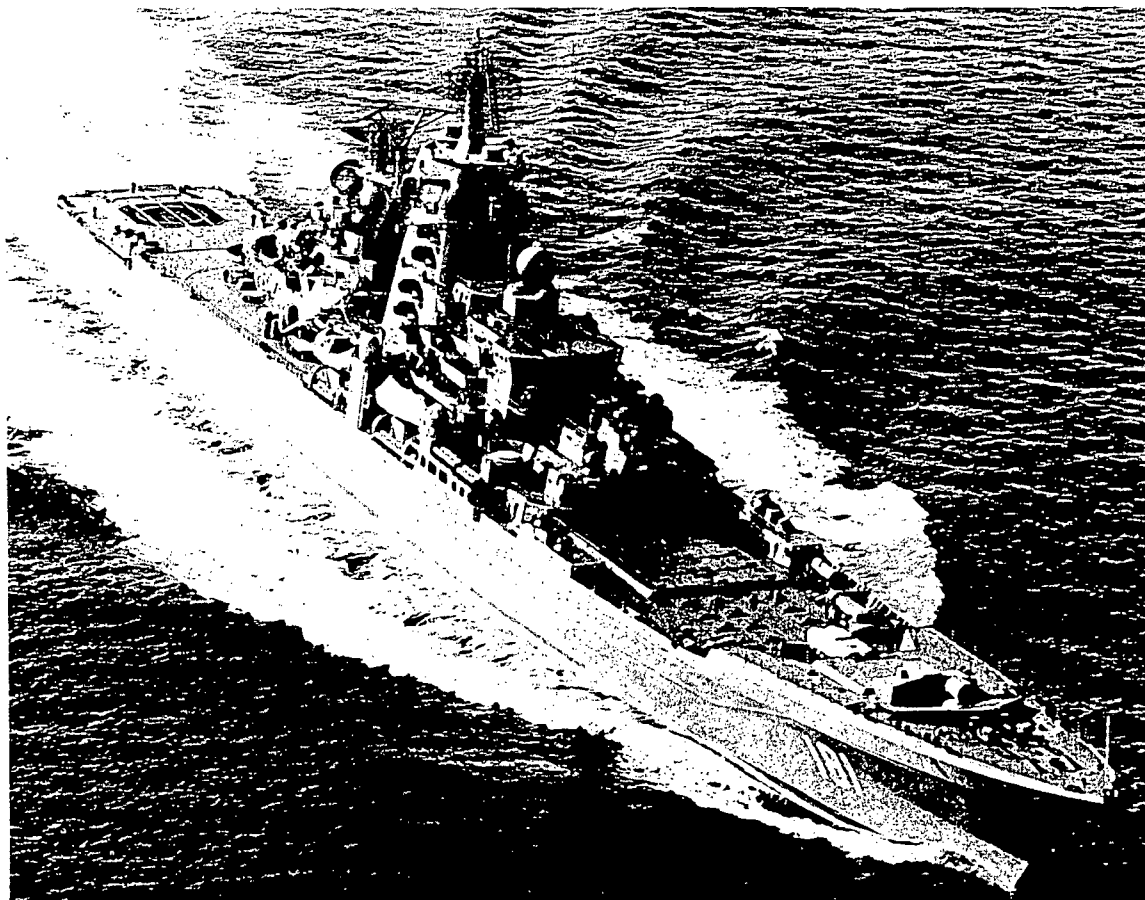


This map shows the area of the Persian Gulf region within which Soviet tactical aircraft could carry out two-way air-to-air combat missions by operating from bases in the USSR, Afghanistan, Ethiopia, and South Yemen.

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## The Kirov Cruiser



*The Kirov, now undergoing sea trials, is the Soviet Union's first nuclear-powered surface combatant ship.*

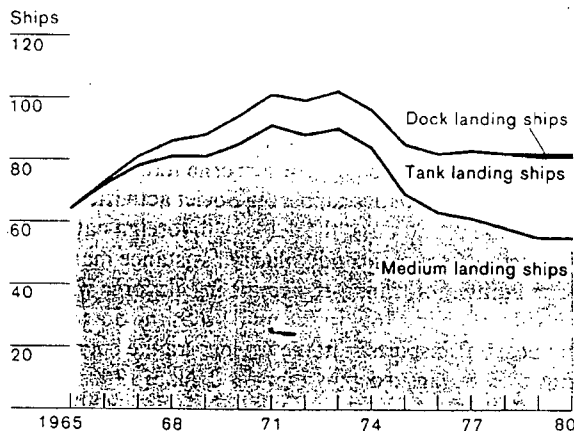
[ ]  
suitable for employment in more distant areas. Their comparative neglect of forces for long-distance operations has been influenced in part by geography—most areas of vital interest to them are close to the USSR—but it also illustrates the Soviets' perception that they can rely on surrogate forces in the Third World. [ ]

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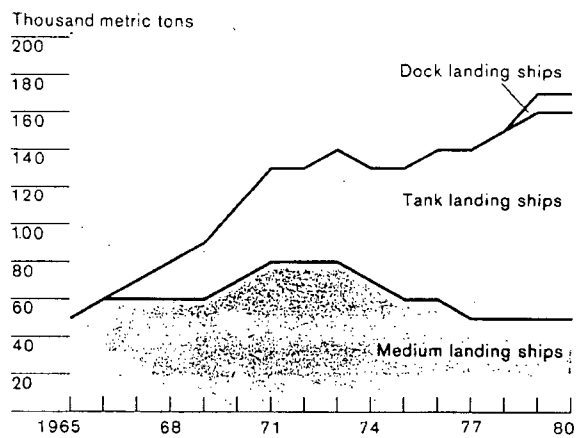
Soviet naval forces that can be used in distant areas include large surface combatants and some amphibious ships. Since 1965, the number of large surface combatants has increased (see page 24). The number of active amphibious units declined in the 1970s, but their total tonnage has increased as older landing ships in the 1,000- to 2,000-ton range are replaced by larger and more modern units. Three classes of ships, the

## Trends in Soviet Power Projection Forces

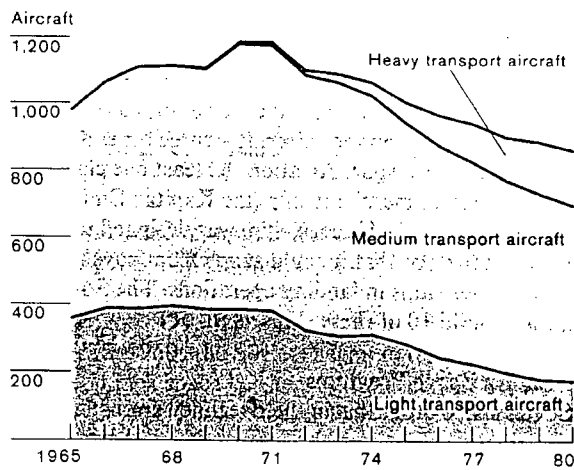
Naval Amphibious Ships



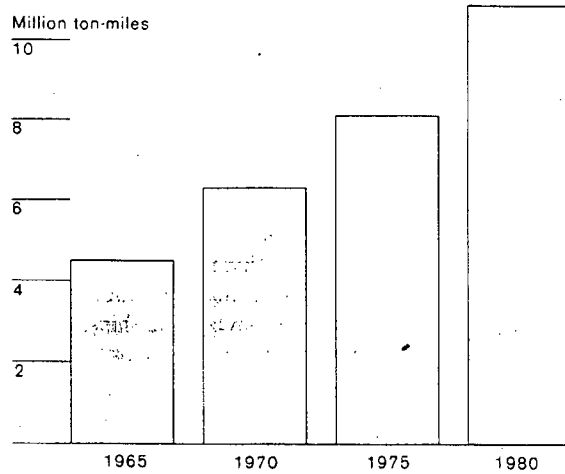
Tonnage of Naval Amphibious Ships



Military Transport Aviation Aircraft

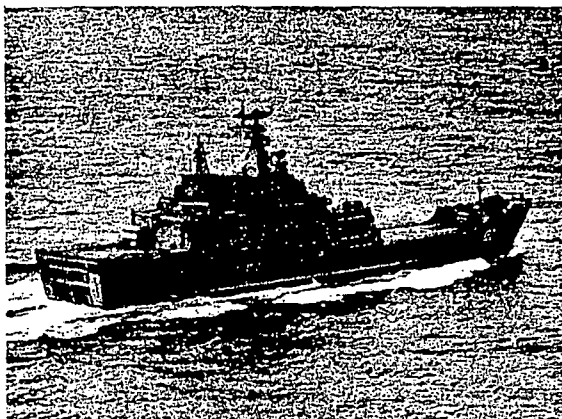


Daily Ton-Mile Capability of Transport Aircraft<sup>a</sup>



<sup>a</sup>The ton-mile is a measure based on the following: the number of aircraft in the inventory; their average payload and cruise speed; the number of hours they are expected to fly daily; and a factor that takes into account the unproductive return portion of a mission.

### The Ivan Rogov-Class Dock Landing Ship



*The Rogov, the Soviet Navy's most advanced amphibious warfare ship, can carry a Naval Infantry battalion and air-cushion landing vehicles. One unit is operational and another is under construction.*

Alligator- and Ropucha-class tank landing ships and the Ivan Rogov-class transport dock, can carry combat troops on distant deployments. The 27 ships of these classes (all of which were constructed since 1965) make up less than one-third of the ships in the Soviet amphibious force, but nearly three-fourths of the tonnage. With these ships, plus the addition since 1965 of about 35 Polnocny-class medium landing ships, the lift capacity of primary Soviet amphibious ships has more than tripled.

The Soviet Union has no equivalent to the US Marine Corps, but it maintains a small force of Naval Infantry intended primarily for initial amphibious assaults against NATO. The force was disestablished in the 1950s but reactivated in 1963. It had only about 2,100 troops in the mid-1960s and is still relatively small (about 12,000 men) and lightly armed. The Soviet amphibious force has the theoretical capacity to transport all of these troops, but many of its ships would not be available in the proper areas on short notice.

Soviet airborne forces consist of six combat-strength divisions and one training division that was formed in the early 1970s. As is typical of airborne forces, these units are smaller and less heavily armed than other divisions, but their firepower, mobility, and air defense capability have been improved by the introduction of new amphibious vehicles, self-propelled artillery, mobile rocket launchers, and portable SAMs, as well as by increases in the number of assault guns in a division.

Military Transport Aviation is the Soviet force charged with supporting the airborne forces, as well as with general logistics support to Soviet activities in and out of the country and the delivery to foreign nations of important economic and military assistance materiel. The number of transport aircraft in this force was less in 1980 than in 1965. In the mid-1960s the Soviets had no heavy transports suitable for long-range operations, but they began to deploy them in the late 1960s. As a result, the lift capability of the force nearly doubled from 1965 to 1980. It remains markedly inferior in capability, however, to US airlift forces.

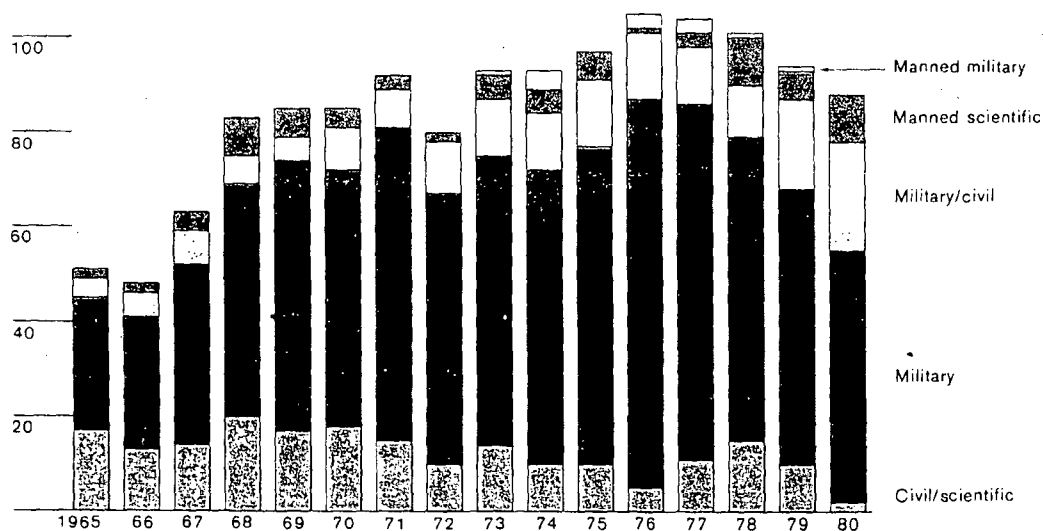
The Soviets have also modernized their civilian fleets of both aircraft and merchant ships, and these are assets that could augment military forces operating in distant areas. The state airline, Aeroflot, has over 3,000 high-performance aircraft—three times as many as Military Transport Aviation. At least one class of modern Soviet merchant ship (the Kapitan Smirnov-class roll-on/roll-off cargo ship) was designed to naval specifications so that it could supplement naval amphibious ships in landing operations. The Soviets plan to build 10 of these ships.

### Military Space Programs

Soviet space programs in the Brezhnev era have increasingly emphasized the support of military operations. In the early 1960s, Soviet space programs were dominated by heavily publicized space flights with scientific objectives. In the mid-1960s, as development programs initiated in the mid-to-late 1950s reached completion, the Soviets launched newer satellites with practical military and economic applications. The military satellites included systems for photographic and electronic intelligence, reconnaissance, navigation,

## Soviet Space Launches

Total launches, including failures  
120



geodesy, covert communications, the calibration of radar signals, and the interception of other satellites.

In the late 1960s the Soviets began to test larger and more complex space boosters and spacecraft, but they encountered serious setbacks. They redirected their manned space programs to Earth-orbiting space stations, with both military and scientific missions. Since the early 1970s, Soviet space launches have concentrated on systems for military support. They have improved the capability of their electronic intelligence and photoreconnaissance satellites, developed satellites fitted with radar and passive electronic scanners for ocean surveillance, and introduced a system for detecting missile launches. They have also developed a communications satellite network in geosynchronous

orbit (that is, at a high altitude so that it is stationary with respect to the Earth).

The number of successful space launches conducted annually has nearly doubled since the mid-1960s, and the Soviets now have an average of about 90 satellites operational at any given time. About 70 percent of these are military and 15 percent civilian; the other 15 percent have dual military and civilian applications.

### Command and Control

Concurrently with their programs to expand and modernize military forces, the Soviets have improved their ability to communicate with and control forces in war and peace. This has involved changes in organization and procedures, as well as the introduction of new command control systems.

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### Readiness of Soviet Forces

*Communications systems that the Soviets have introduced permit the General Staff to monitor and modify the readiness of Soviet forces. The Soviet approach to military readiness differs from that of the United States. The Soviets routinely keep only a small part of their forces at their highest levels of readiness for war. This includes the ICBM force, which is capable of reacting quickly to the threat of a nuclear attack. Forces that would bear the brunt of coping with an enemy conventional offensive—for example, the air and ground forces in Eastern Europe—are also ready to respond quickly.*

*Most of the Soviets' military forces, however, are at lower levels of preparedness. For example, only about 15 percent of their ballistic submarines are on patrol, and they do not keep strategic bombers on airborne alert. The operating rates of Soviet general purpose naval and air forces are lower than those of US forces. Large amounts of ground force equipment are kept in ready storage rather than operated continuously. (This allows Soviet equipment to be maintained in better condition than that of Western forces.)*

[redacted]

*The Soviet rationale for this readiness posture is that, although a surprise attack is possible, it is more likely that a "warning period," characterized by increasing tensions, will precede any major East-West conflict. Consequently, only those force elements most vulnerable to surprise attack and most necessary to successful prosecution of the early stages of a war need be capable of rapid response. Most of the forces are at relatively low readiness levels and are prepared for either a phased, deliberate buildup or a rapid mobilization.*

*Soviet doctrine calls for a high degree of material readiness—but this also takes a different form than in the United States. The Soviets send equipment to the rear for overhaul and maintenance at frequent intervals and operate it comparatively little between these repairs. As a result, a high percentage of equipment is combat ready—in the sense that it has been recently overhauled. The Soviets probably pay a penalty in the proficiency of their combat personnel.*

Soviet President Brezhnev is Commander in Chief of the Soviet Armed Forces. To assist him and the other top political-military authorities in controlling war-time operations, in the late 1960s the General Staff assumed greater authority for directing the military services and for controlling their readiness. The Soviets have developed new command structures, which emphasize intermediate levels of command. The use of these intermediate levels reduces the number of commands the higher authorities must control directly as well as relieving lower level commanders of some of the burden of coordination. The Soviets have also reorganized some of their forces to facilitate combined operations. These changes offer the potential to improve the coordination of forces and eliminate redundancy, thus promising greater efficiency in the conduct of future operations. [redacted]

Over the past 15 years the Soviets have improved the survivability of their command facilities, beginning with those for the highest echelons and extending the improvements downward. They have constructed some 500 hardened command posts and provided such mobile facilities as command ships and submarines and airborne and trainborne command posts. They have introduced new communications systems—the use of communications satellites, for example, is now widespread in the military. The command and control systems introduced in recent years have improved the security, survivability, and reliability of communications and provided Soviet commanders with more flexible and redundant means of directing their forces. [redacted]

[redacted]

# Leonid Brezhnev in the Uniform of the Commander in Chief of the Soviet Armed Forces



*This photograph was taken in 1976, when Brezhnev (right) received his marshal's star. In the center is Nikolay Podgornyy, whom Brezhnev subsequently replaced as Soviet President, and at left is Dmitriy Ustinov, Minister of Defense.*

## The Price of Power: Trends in Resource Allocations to Defense

### Defense Expenditures

To support their military buildup, the Soviet leaders have increased military expenditures in real terms each year since the late 1950s. In the Brezhnev years, their defense expenditures have grown at an average annual rate of 4 to 5 percent, with the growth slightly more rapid in the late 1960s than in the 1970s. The growth reflected increasing resource commitments—across the board—to all of the military services and missions. More than two-thirds of Soviet expenditures between 1965 and 1980 went for new military hardware—its development and procurement.

The distribution of Soviet military investment and operating expenditures<sup>\*</sup> has changed during the Brezhnev era as budget priorities were altered to support the policy of balanced force development. The largest shares went to the Air and Ground Forces and the Navy, three services whose budgets had been cut by Khrushchev. Each has received about one-fifth of total investment and operating expenditures since 1965. The National Air Defense Forces absorbed about 15 percent of the total and the Strategic Rocket Forces about 10 percent, with national command and support activities accounting for the remaining 15 percent.

There were several shifts in spending patterns between the mid-1960s and early 1970s:

- A slight increase in the Ground Forces' share in the late 1960s, reflecting the expansion of the force, primarily along the Sino-Soviet border.
- A marked growth in the Air Forces' share in the early 1970s, reflecting the modernization of Frontal Aviation.
- Fluctuations in the Strategic Rocket Forces' share, illustrating the deployment cycles of ballistic missiles.
- A cut in the share allocated to the National Air Defense Forces after deployment of the Moscow ABM system was completed in 1969.

With these exceptions, the distribution of expenditures was fairly consistent over time.

Between 1965 and 1978, Soviet military spending consumed a relatively constant 11 to 13 percent share of the gross national product (GNP). (This share can be calculated as 11 to 12 percent under the definition of defense commonly used in the United States or as 12 to 13 percent under a broader definition, which the Soviets may use. The broader definition includes additional activities, such as those for internal security and space programs.) In the past two years the defense share of GNP has increased to some 12 to 14 percent, because of declining economic growth.

<sup>\*</sup> Research and development expenditures are excluded from this analysis of distribution because we do not have the data required to apportion them by military service.

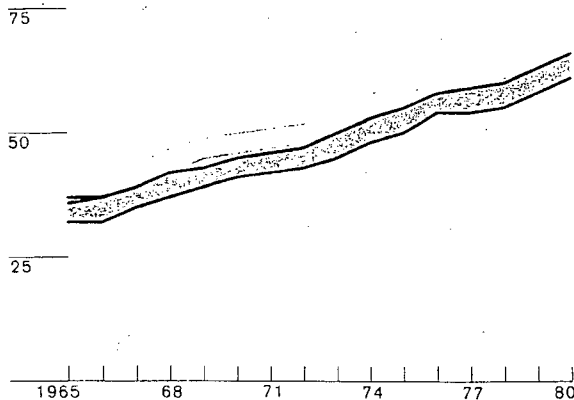


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## Trends in Soviet Defense Expenditures and Costs

### Estimated Defense Spending

Billion 1970 rubles



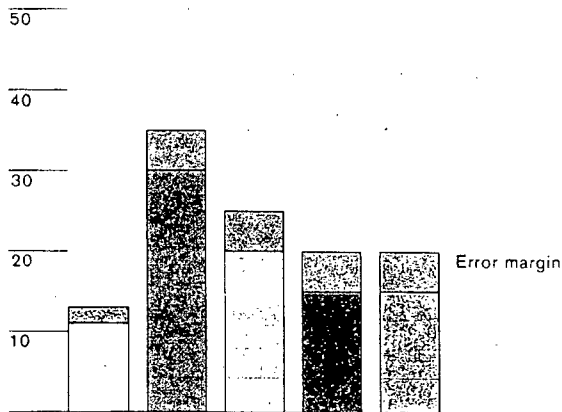
Defense spending as it might be defined by the Soviets.

Defense spending as CIA defines it for comparison with US accounts.

For an explanation of these definitions, see *Soviet Spending for Defense: Trends Since 1965 and the Outlook for the 1980s*, SR-10147, October 1979.

### Estimated Defense Shares of Soviet Economic Resources

Percent



Gross national product, 1965-80

Machine building and metal working, 1965-80

Metallurgy, 1972

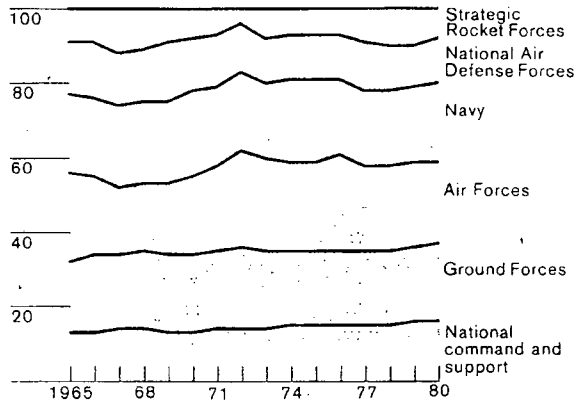
Chemicals, 1972

Energy, 1972

Data for the metallurgical, chemical, and energy sectors were calculated from the Soviet 1972 input-output table.

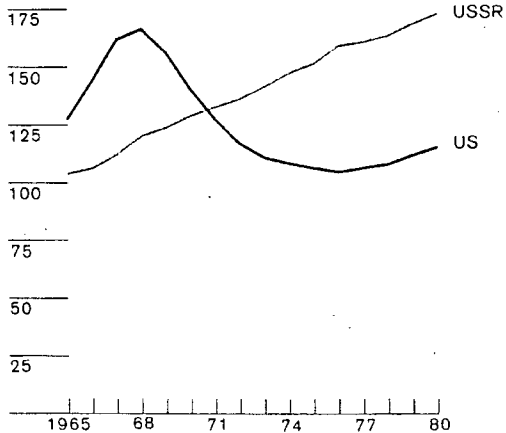
### Estimated Allocation of Investment and Operating Expenditures Among Military Services

Percent



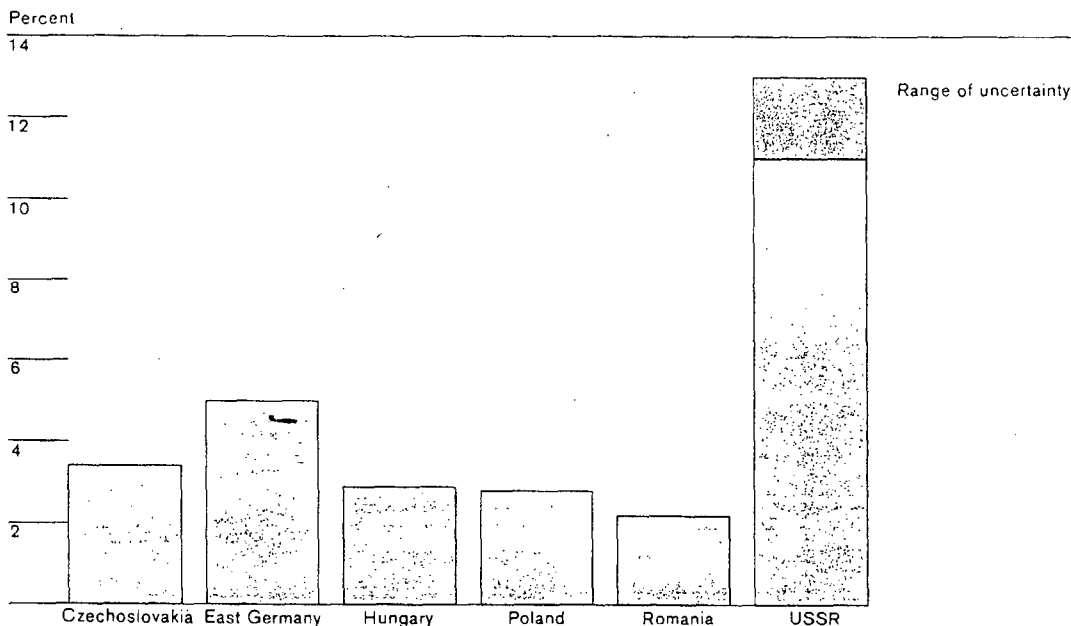
### Estimated Dollar Cost of Soviet Defense Activities and US Defense Outlays

Billion 1979 dollars



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# **Defense Spending as Shares of GNP in the Warsaw Pact Countries (annual average, 1970-78)**



Data shown here for the USSR are based on CIA estimates stated in constant 1970 rubles; data for non-Soviet countries are based on their announced defense budgets in native currencies at current prices. Bulgaria has not announced a defense budget since 1970.

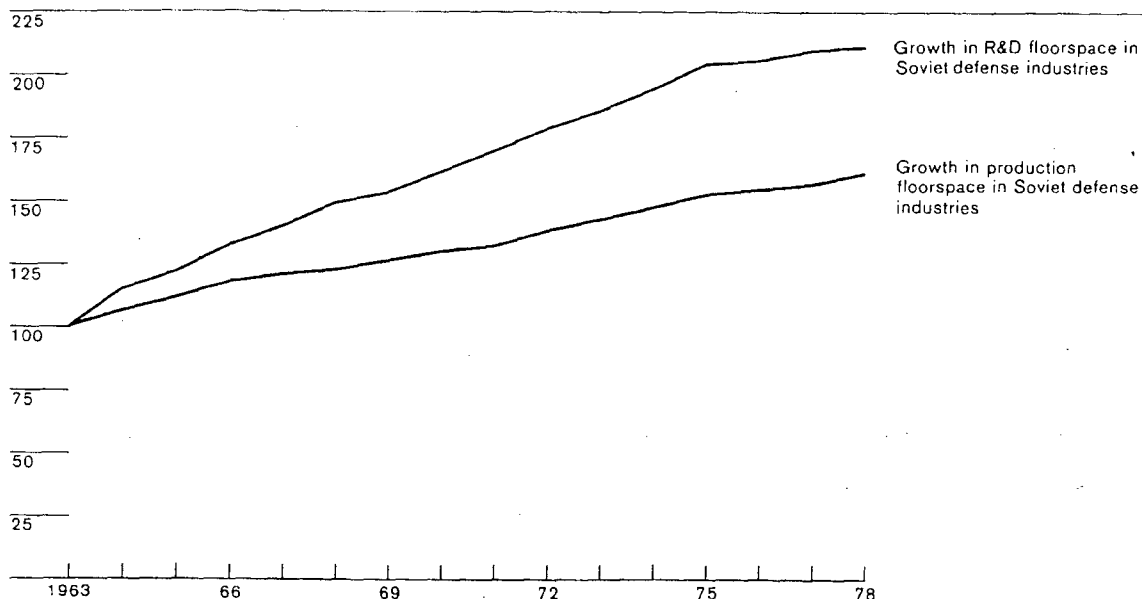
Over the last 15 years Soviet defense programs accounted for about 15 percent of the final output of all Soviet industrial production and more than 30 percent of the final output of the machine-building and metal-working sector (which produces durable goods for civilian consumption and investment as well as military hardware). The Soviet defense effort, directly and indirectly, took about 25 percent of the gross output of the metallurgical sector and 15 to 20 percent each of the gross output of chemicals and of energy (including 10 to 15 percent of refined petroleum). Defense also absorbed a large share of scientific, technical, and management talent (at least half of all Soviet research

and development personnel are involved to some extent in military programs) and drew heavily on the output of science and of high-quality components and equipment such as electronics.

Measured in constant dollar terms, the cost of Soviet defense activities was about 80 percent of US defense spending in 1965, but by 1980 it was about 50 percent higher than US spending. This was due both to a steady increase in the cost of Soviet programs and to a decline in real US defense expenditures over most of the period. For the Brezhnev period as a whole, the cumulative dollar costs of Soviet defense activities

## Trends in Allocation of Soviet Military Research, Development, and Production Resources

Index: 1963=100



were about 10 percent greater than US expenditures. (They were about 25 percent greater if US expenditures for the war in Southeast Asia are excluded from the comparison.)

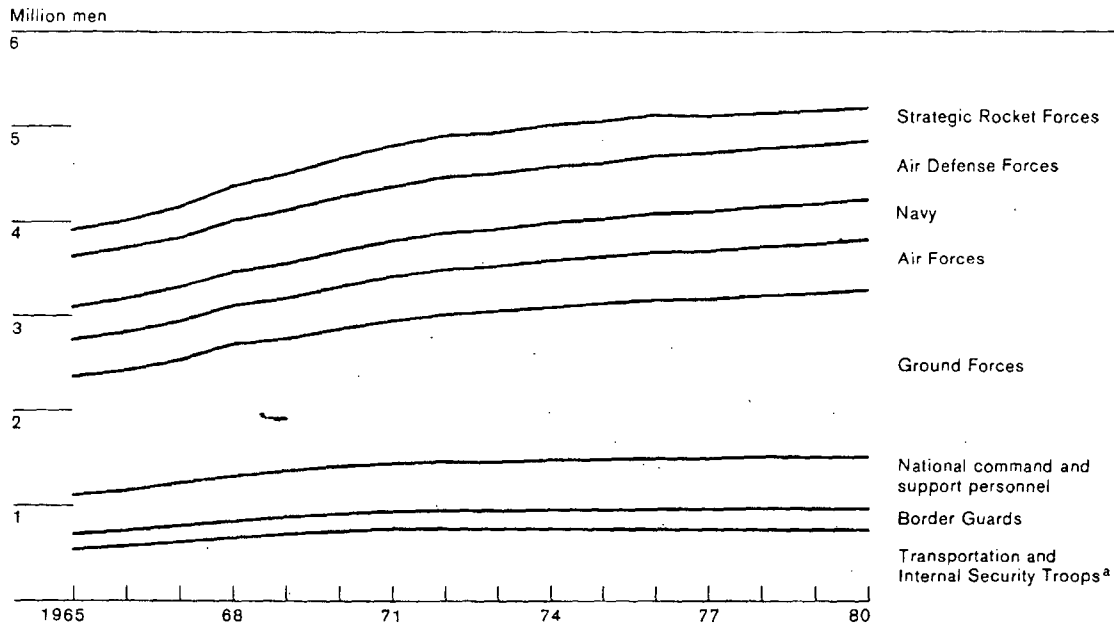
We have less information on the defense expenditures of the non-Soviet Warsaw Pact countries, but the announced defense budgets of these countries (which are better indicators of actual spending than the announced Soviet defense budget) all show substantial growth since the mid-1960s. These figures, which differ in coverage from country to country and reflect inflation as well as real increases in spending, all increased rapidly in the late 1960s. Growth in the 1970s was more modest, ranging from 4 to 7 percent a year. When inflation is taken into account, the real growth in spending probably varied between 2 and 7 percent—sufficient to support some expansion of the

non-Soviet Warsaw Pact armed forces and the replacement of some obsolescent weapons and equipment with more modern systems. The share of total economic resources currently allocated to defense in Eastern Europe is much smaller than in the Soviet Union (see chart on page 35).

### Military Research, Development, and Production Resources

The Soviets have expanded their military research and development (R&D) and production facilities. The total floorspace available for military R&D more than doubled between 1963 and 1978 (the earliest and latest years for which data are available). Floorspace for the design and development of final weapon systems increased by about two-thirds, with growth most rapid at facilities for development of missiles and aircraft. Facilities engaged in R&D for subsystems and compo-

## Trends in Total Soviet Military Manpower



nents (radars, communication systems, and computers, for example) expanded more rapidly than those engaged in final weapons development, reflecting the increasing complexity of Soviet military equipment.

The R&D facilities currently available to the Soviets can support the simultaneous development of more than 150 weapon and support systems—military aircraft, missiles, naval ships and submarines, principal ground forces arms, and military space systems. There has been little change since 1965 in the number of systems that the Soviets have in development simultaneously. (The increasing resources devoted to R&D facilities appear to have been related primarily to the increasing sophistication and complexity of weapons.)

Since 1963 the Soviets have constructed nearly 200 machining, fabrication, subassembly, and assembly buildings at 54 key defense plants and shipyards. Production floorspace at these plants, which produce most major weapon systems, increased by nearly 60 percent. As with R&D facilities, the most rapidly expanding industries were those that produce missiles and aircraft.

The number of production lines available for Soviet weapon systems is now about 190—some 50 to 60 percent more than in 1965. The increase in production capacity reflects an established practice: when the Soviets introduce new and modified weapon systems into their forces they build new facilities and use the older facilities by continuing to produce older designs, either for their own military services or for export.

### **Military Manpower**

The manpower resources of the Soviet military establishment have increased since the mid-1960s as a result of the revitalization of general purpose forces and the buildup along the Sino-Soviet border. Total military manpower increased by about one-third (see chart on page 37) and now stands at 5.2 million.<sup>9</sup> The growth resulted primarily from expansion and modernization of the Ground Forces (additions to the Ground Forces accounted for about two-thirds of the total increase) and, to a lesser extent, from increases in manpower for the air, air defense, and naval forces and for national command and support. [ ]

The number of men assigned to the strategic missile forces grew between the mid-1960s and the early 1970s, as the number of missile launchers increased. It subsequently declined with the dismantling of older missile systems under the SALT I Interim Agreement and with the deployment of new systems that required less manpower than their predecessors. Over the period between 1965 and 1980 the Soviet military absorbed some 2 to 3 percent of the labor force; that share remained fairly stable over time. [ ]

The Soviet military effort relies heavily on conscription; nearly three-fourths of the men in the Soviet military are draftees. In the 1970s the Soviets conscripted a larger share of eligible young men than in the 1950s and 1960s—about 75 percent, compared to 40 to 60 percent in earlier years. Moreover, the educational level of conscripts has risen—the percentage with a secondary education increased from about 20 percent in 1965 to 35 percent in the mid-1970s, while the percentage with only a primary education declined from 20 to less than 5 percent. [ ]

### **The Uses of Power: Military Force as a Political Instrument**

The growth of Soviet military power has paid important political, as well as military, dividends. The Soviets appreciate that military strength is the foundation of the USSR's claim to superpower status and see their

<sup>9</sup> This total includes nearly 1 million men assigned to internal security, construction, and transportation units which do not fulfill roles that the United States would consider to be military. (U)

growing military might as providing the basis for the conduct of an assertive foreign policy. [ ]

### **The Superpower Relationship**

Soviet leaders see the growth of strategic military power as the key to relations with the United States. From a position of gross strategic inferiority in the late 1950s and early 1960s, the Soviets have moved through steady efforts to a present position in which their strategic nuclear capabilities are widely recognized as at least equal to those of the United States. The Soviets consider this achievement to be the basis of their claim to equality with the United States as a bargaining partner and as a superpower with global interests. Over the last two decades, the Soviets have shown they are committed to improving their strategic posture and are serious in asserting that they will match any increase in the US defense effort. [ ]

Current Soviet leaders, unlike Khrushchev, have refrained from threatening to use their strategic might, but they see the USSR's improved military posture as an effective deterrent to similar threats by the United States. They probably believe that their strategic forces would deter the United States from initiating intercontinental nuclear war in any circumstances short of a clear threat to US national survival. Moreover, the Soviets probably believe that the current strategic relationship lessens the US ability to use military force or even threaten to use it in areas of vital concern to the USSR, especially where the Soviets or their allies also have the advantage in conventional forces. [ ]

### **Europe and Asia**

The actual use of Soviet military forces during the Brezhnev years has been largely confined to the periphery—border skirmishes with China and the invasions of Czechoslovakia in 1968 and Afghanistan in late 1979. The border actions against China were deliberately limited and demonstrated Soviet resolve, although they may have accelerated China's efforts to improve relations with the West. The invasion of Czechoslovakia kept a socialist ally in the fold, without permanently souring relations with the West. Soviet operations in Afghanistan have not succeeded in pacifying the country and have led to political and economic sanctions against the USSR. There has not, however, been any sign of a reevaluation of the utility

of military power because of the Afghan experience. Indeed, Soviet military moves related to Poland in 1980-81 raise once again the possibility of a major intervention [ ]

The political impact of the improvement of military forces has been uneven. The Soviets probably believe that the buildup opposite China is an effective deterrent to major trouble on the border. They are confident that they possess clear military superiority, but they also recognize that China's nuclear forces deter them from making the sort of surgical strike they apparently once contemplated, and that preponderant Soviet military might has not prevented the Chinese from competing with the USSR in the Third World and improving its relations with the West [ ]

The military balance in Europe poses delicate problems. The Soviets probably perceive that their buildup of forces has been an important element in continued Western acceptance of Soviet hegemony in Eastern Europe. They probably also see their forces as a deterrent against political or military developments that would alter the balance of power in Europe. Enhanced Soviet military power—and the prospect of nuclear incineration in an East-West confrontation—have influenced the attitudes of Europeans and weakened NATO's united front. At the same time the Soviets know that if they appear too threatening they risk the reverse—a possibility of galvanizing NATO. Thus, Moscow has pursued, with some success, a dual policy: improving its military strength on the one hand, and on the other pursuing arms control talks, attempting to improve trade and diplomatic relations, and in various other ways—such as the major propaganda campaign against the neutron bomb—trying to undermine NATO's cohesiveness. [ ]

### The Third World

Khrushchev's successors have continued to view the Third World as fertile ground for the expansion of Soviet influence. Their primary political objectives have been to encourage opposition by Third World countries to US, West European, and Chinese policies and to affect the outcome of regional conflicts in favor of Soviet interests. Increasingly, in the last 15 years, the Soviets have also pursued military objectives, seek-

ing greater access to support facilities for naval, combat air, and air transport operations in distant areas. [ ]

Soviet exports of military equipment and military training programs have grown rapidly since their inception in the 1950s.<sup>10</sup> The value of Soviet military sales to states in the non-Communist Third World in 1980 was some \$14 billion (1980 prices). In 1979 the Soviets had nearly 15,000 military advisers in Third World countries—more than four times as many as in 1965. Since 1955 nearly 50,000 Third World military personnel have been trained in the Soviet Union. [ ]

Since the mid-1960s the Soviets have conducted six major airlifts of combat supplies—to the Middle East in 1967 and 1973, to North Yemen in 1967-68, to Angola in 1975-76, to Ethiopia in 1977-78, and to Vietnam in 1979. Their military involvement in Third World conflicts has evolved in stages:

- Soviet air and air defense forces were used in the late 1960s to mid-1970s in the Middle East.
- Soviet logistics transported and sustained Cuban combat forces for intervention in Angola and Ethiopia in the mid-to-late 1970s.
- Soviet combat ground and air units invaded Afghanistan in 1979—the first direct involvement of Soviet ground forces outside the Soviet Bloc. [ ]

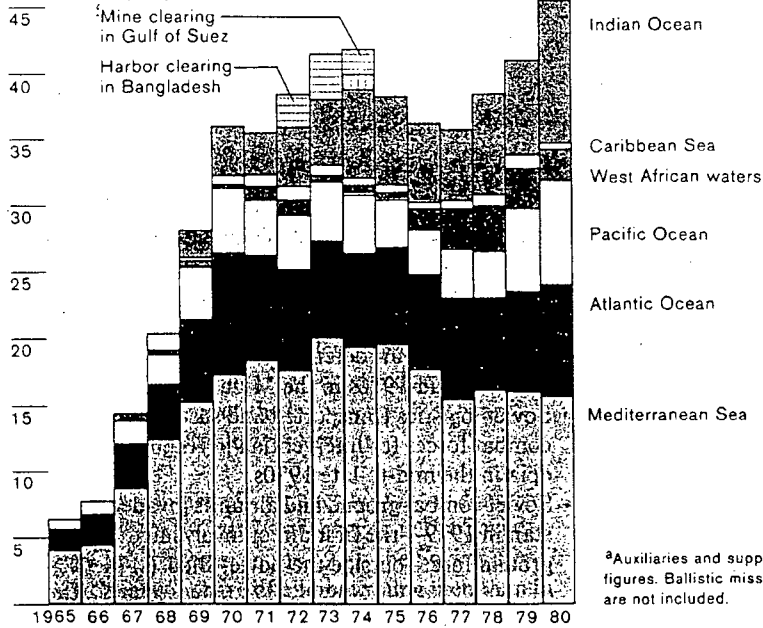
The presence of Soviet military forces, especially naval ships, in the Third World increased rapidly from the mid-1960s until the mid-1970s. Operations of general purpose ships outside home waters, for example, grew rapidly between 1965 and 1970. They dropped off from 1975 through 1978, but increased sharply in 1979 and 1980, when they exceeded the level of 1974, the previous peak year. Port visits to Third World countries by Soviet ships (including many to areas distant from the USSR, such as West Africa) increased from a negligible number in the mid-1960s to more than 500 a year in the mid-1970s. They then declined somewhat, primarily as a result of the Soviet expulsion from Egypt. [ ]

<sup>10</sup> Military sales are an increasingly important source of hard currency earnings for the USSR, as well as a means of expanding its political influence. In 1980, military sales accounted for at least 20 percent of hard currency exports. [ ]

## Trends in Soviet Use of Naval Forces in Distant Areas

### Operations of General Purpose Naval Forces Outside Home Waters<sup>a</sup>

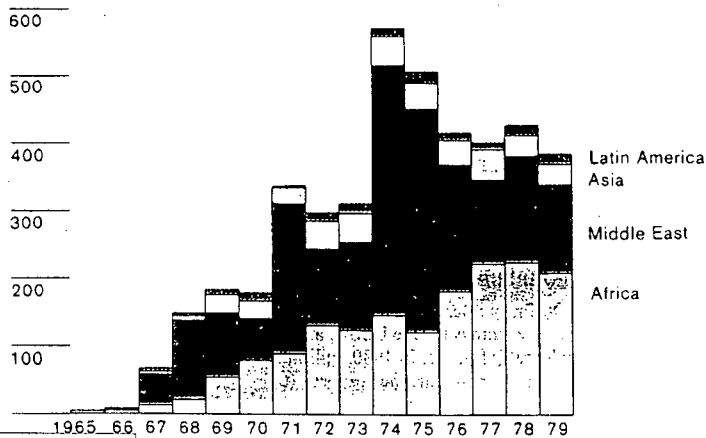
Thousand ship-days



<sup>a</sup>Auxiliaries and support ships make up about 50 percent of the above figures. Ballistic missile submarines, hydrographic, and space support ships are not included.

### Naval Port Visits to Third World Countries

Port visits



Soviet leaders see their military activities in the Third World as a major asset and believe that they have gained from the increase. There have been setbacks, such as the expulsion of Soviet forces and advisers from Egypt. They have often underestimated the power of nationalism and how much some Third World leaders resent heavyhanded Soviet behavior. But the Soviet leaders also believe that other states' perceptions of the magnitude of Soviet power has created political opportunities. They have expanded their influence in some countries at the expense of China and the West, demonstrated that they are willing and able to support clients, and enhanced their image as the leaders of a great power capable of projecting military force far from its shores. ☐

#### Determinants of the Military Buildup

The causes of the Soviet arms buildup are many—no factor alone can adequately explain the general magnitude and pace of the effort, let alone the particular mix of programs chosen—and they are also tightly interrelated. Despite the complexity of the subject, however, it is possible to describe some of the major determinants of the Soviets' military policy and some of the forces that have shaped their power:

- The long-term upward trend in military expenditures and capabilities in the Brezhnev era springs from the Soviet leaders' belief that military force is an essential and effective policy instrument, their ambitious military doctrine, and their perception of power relations in the international arena.
- The principal constraint on the Soviet policymakers is the knowledge that the economic resources available to them are finite and that military growth must be weighed against other goals.
- The particular areas of emphasis in force planning, like the ultimate characteristics of the weapon systems that are deployed, are determined by a mix of technological opportunities and constraints, assessments of foreign threats, institutional momentum, and competition among people and organizations within the defense bureaucracy. ☐

#### Factors Encouraging the Buildup

The most basic cause of the arms buildup is the Soviet leaders' long-held view that military power is a necessary and effective instrument of policy. They see international politics as inherently unstable, its shifting forces presenting both dangers and opportunities for the USSR. They believe that the threat or use of force can influence the attitudes and decisions of other leaders and help the Soviets to achieve strategic objectives. They view their military power as serving them well in this regard, but nevertheless see a requirement to continue to improve it, both to prevent a reversal of the gains they have made and to deter their opponents from interfering with the processes through which they hope to make further gains. ☐

This belief in the general usefulness of military power is reflected and reinforced by formal military doctrine. In Soviet usage, military doctrine is a body of views officially adopted by the political and military leaders on the nature of, preparation for, and conduct of war. Military writings are the principal source from which we glean the content of this doctrine. These writings specify that Soviet forces are to be structured to fight and win future military conflicts. The leaders apparently believe that Soviet forces so structured are the most effective deterrent to war; and the doctrine holds that if deterrence fails, the forces must try to attain victory, even in a general nuclear war. ☐

These broad and comprehensive goals have affected Soviet force developments and operations. Some of the indications are:

- The trends in size, structure, and deployment of Soviet intercontinental nuclear, theater nuclear, and theater conventional forces described earlier in this paper.
- The emphasis that the Soviets place on strategic weapons suitable for destroying US nuclear delivery systems, on active defense against strategic attack (including continued funding of ABM programs), and on passive (civil) defense.
- The way the Soviets exercise their forces—in particular, scenarios for waging a protracted war in which both sides use nuclear weapons. ☐



Except possibly during the period of Khrushchev's dominance, Soviet military planners have consistently rejected the idea that a nation's military forces are adequate when they can gravely damage a potential enemy. The concepts known as "minimum deterrence" and "mutual assured destruction"—which can justify a lower level of expenditure than would be required for a war-fighting capability—are not a part of the Soviet criteria for assessing the adequacy of military power.

Changing power relations in the international environment—and the leaders' perceptions of them—also affect Soviet military goals. For example, the Sino-Soviet rift was a major factor in the expansion of Soviet theater forces in the 1960s and 1970s. Despite the reduction in US real military spending that has characterized much of the Brezhnev era, the Soviets continue to regard US military programs as challenging and requiring corresponding improvements in their own forces. Together with advances in military technology and the upgrading of the forces of other potential enemies, these changes in the political and military environment have contributed to the upward trend of the Soviet defense effort.

None of these factors encouraging the military buildup helps establish a clear definition of how much military power is enough. Indeed, the Soviet leaders' attitudes and perceptions and their ambitious military doctrine, taken alone, would lead to essentially open-ended requirements for military forces.

#### **Factors Constraining the Buildup**

Nonetheless, the leaders and military planners must temper their desires with a realization of what is feasible economically and politically. They fund their military programs generously, but are limited by the need to maintain a rate of economic growth that is adequate to support their long-term domestic and international goals. As a result, during most of the Brezhnev era, the military effort increased roughly in step with the economy as a whole.

#### **Factors Affecting the Direction of the Buildup**

When Soviet planners approach decisions on the structure of their forces, they look inside and outside their borders, considering technical opportunities and foreign threats. And while the availability of technology is

one of the determinants of military programs, the methods of Soviet planning and management have an important impact on the introduction of new technology and on the characteristics of Soviet weapons.

Soviet economic activity is managed in large part by a system of rules and incentives that require managers—including defense industry managers—to fulfill quantitative goals. This system discourages risk, encourages long production runs, limits technological changes in weapon characteristics, and promotes a conservative approach to new designs. Reinforcing these tendencies is the desire of the military services for large numbers of weapons that are not too complex to be operated and maintained by continually changing conscript personnel.

Consequently, the dominant theme in Soviet military system development has been to upgrade weapons capabilities through the gradual introduction of new technology. Revolutions are few: most newly introduced Soviet weapons reflect evolutionary changes from their predecessors. They usually use many components of earlier weapons, have a single mission or a limited range of missions, and are designed for high reliability and ease of operation. Weapons designed according to these criteria can be produced and deployed in large numbers, with few delays, and with minimal technological risk.

This rule has had exceptions: the Soviets have sometimes shown a willingness to accept the higher risks and costs of developing weapons based on new technological concepts, but this has been a secondary theme. They have pursued this path when the evolutionary approach is too slow to meet changing threats or doctrinal requirements, when the growth potential of a family of weapons is exhausted, or when a concentrated research effort creates new technological opportunities. (Even in these cases, the Soviets insure against failure by continuing to produce older systems.) The failure rates for programs based on new technology are higher than for the evolutionary systems, and the development times are longer.

Another consideration for Soviet planners as they shape their forces is the need to counter foreign military strategies, deployments, and weapon systems. Their doctrinal requirements make the planners ex-

# *Soviet Reactions to Foreign Threats: The Case of the MIG-25*

Soviet planners often tailor their weapon programs to counter planned Western systems. The programs acquire an institutional momentum, however, that sometimes keeps them alive after the original threat has disappeared. Soviet development of the MIG-25 Foxbat interceptor provides a case in point.

[redacted] the MIG-25 program was initiated in response to US plans to produce a high-altitude strategic bomber, the B-70. The B-70 R&D program began in 1954, and a development contract had been awarded by 1957. In the late 1950s, the Soviets began development of a high-speed interceptor optimized for high-altitude defense, the MIG-25. US interest in the B-70 waned during the early 1960s, as the potential of strategic missiles was more widely recognized, and in 1963 the United States decided to build only two B-70s for research.

The MIG-25 program continued, however. The first flight test of the aircraft took place in 1964, serial production began in 1968, and the first delivery to operational units was in 1970—after the B-70 program had been formally canceled.

The Soviets went on deploying the MIG-25 despite the fact that its capabilities against the current low-altitude US bomber threat are poor. (They are currently modifying the aircraft to improve its low-altitude capabilities.) [redacted] deployment continued because the MIG-25 is a technologically advanced aircraft that modernizes the interceptor force, even though it cannot meet the contemporary threat.

*The MIG-25 Foxbat Interceptor*



*The B-70 Bomber*



tremely sensitive to foreign military developments and affect weapon programs and the organization of the forces. Although there is no simple relationship between total US and total Soviet defense expenditures, the military planners monitor US plans and programs closely, as well as developments in Western and Chinese forces. They draw up requirements to develop and produce new weapons when they gain knowledge of important foreign programs that must be countered to maintain Soviet war-fighting potential or can be emulated to improve it. ☐

Institutional structure has also been important. The Soviet leaders have organized their political and economic systems to give first priority to their military goals:

- The top leaders who are members of the principal body devoted to national security, the Defense Council, participate directly not only in the overall planning and direction of national security policy, but also in many of the details of weapons acquisition. They thus acquire a personal commitment to particular military policies and programs.
- The Soviet system of economic management gives priority to military requirements, offers special incentives to individuals and organizations involved in development and production of military systems, and stations representatives of the military services at research and production facilities.
- The Soviet social structure accords substantial prestige to the military establishment, and the system of universal military service ensures that the majority of young men are exposed to military life. ☐

A fourth important factor in force planning is bureaucratic. To fulfill doctrinal goals and carry out military programs, the USSR has created large and powerful military and defense-industrial establishments, whose leaders have high political status. (Many of them have been awarded seats on the Party's Central Committee.) The five services represent all military missions and are powerful advocates (and presumably competitors) for new programs and resources. Not only are the military and defense-industrial establishments directly represented in the highest political councils, but senior political leaders often take part in lower level workings of these two bureaucracies. The defense industries are closely allied with the military services and receive substantial benefits from continuing and expanding military production. Together, the military and the defense industries can control defense-related information—and withhold it from those outside their chain of command. ☐

## Soviet Military Power in the 1980s

Against the backdrop of the USSR's broadly based, dynamic military programs of the past, Soviet leaders are now making final decisions on their economic and defense plans for 1981-85. The economic plan will be highly publicized, in part, but the defense plan will be secret and available only to a few high-level officials. Because we lack detailed information on Soviet military plans for the early 1980s—and because the Soviets themselves have not yet decided on some of their programs for the middle and late 1980s—we cannot be as confident in our judgments about Soviet military power in the coming decade as in our descriptions of past trends. Nevertheless, we have several clues to the future:

- Our observation of the development of Soviet power over more than three decades.
- Our understanding of the Soviet defense policy process and the factors that affect Soviet decisions.
- Intelligence evidence on specific defense programs now under way and on the technology available to the Soviet designers.

Evidence and analysis along these lines permit us to make fairly confident judgments about the paths that development of Soviet military forces and policies could follow in the 1980s.

The following pages outline these clues. The general view that emerges is our best projection of the course of Soviet military power over the next decade (page 73). Using this projection as a baseline, we then discuss other options open to the Soviets and the probable effect on military power if they should follow one of these other options.

### Forces for Continuity and Change

The environment in which the Soviet leaders are making their choices on future military programs is complex. The international situation is fluid, and the prospects for US-Soviet relations are uncertain. Many of these leaders, both political and military, will pass from the scene before the full force of their current decisions will be felt. Soviet economic growth is slowing; social values are changing; potential enemies are

### Ustinov and Brezhnev



*These two men, who have been close associates for many years, are the key figures in the Soviet military policy process. Ustinov controls the Soviet military establishment and is a member of both the Politburo and the Defense Council. Prior to becoming Minister of Defense in 1976, Ustinov was the Communist Party's overseer of defense industries. Brezhnev heads both the Party and the Defense Council. In previous posts he supervised the missile industry and headed the Navy's political administration.*

posing new threats; and research and development programs are providing new technical options. None of these factors alone is likely to cause any fundamental change in Soviet military policy. Moreover, Soviet options for the 1980s are constrained by program commitments already made and by the rigidities of the planning system. But political, economic, and technical factors could interact in this decade in ways that could

increase the likelihood of discontinuities in Soviet policies. In this section, we examine these factors in the context of the Soviet system for planning and management of defense policy. [ ]

#### The Institutional Setting of Soviet Defense Policy

**Organizations and Actors.** In the Soviet Union, planning and management of defense activities are centralized. A small group of people and organizations participate in defense planning. The ultimate decision-making authority resides with the Politburo, the chief executive body of the Communist Party. The Politburo has 14 full, or voting, members and eight candidate members who do not have a vote. The Politburo includes the top officials of both the party and the government (the Ministers of Defense and Foreign Affairs and the intelligence chief, for example, have been voting members since 1973) and considers the full range of domestic and foreign policy issues. [ ]

Many of the important decisions on military policy probably are made by the Defense Council—the principal organ in the USSR devoted to national security matters. The Defense Council includes the half-dozen top party and government officials with national security responsibilities, supported by senior military and defense-industrial leaders. The members of the Council are the key decisionmakers on military doctrine, plans and programs, arms control, foreign military assistance, and the use of military forces. With Brezhnev as its chairman, the Defense Council operates by consensus, so that its members are collectively responsible for decisions. [ ]

Below the Defense Council are four other organizations that participate in planning and management of national security programs: the General Staff, the Military-Industrial Commission (VPK), the Defense Industries Department of the Central Committee of the Communist Party, and the State Planning Committee (Gosplan). Apparently none of these can override any other where their jurisdictions overlap. Conflicts are resolved through compromise or, failing that, through appeal to senior officials. [ ]

These four organizations have different sources and types of information and different ways of influencing decisions:

#### Key Soviet Organizations for Defense Decisionmaking, Planning, and Management

Organization	Authority and Responsibilities
Politburo of the Communist Party	Ultimate authority for national security decisions.
Defense Council	Approves doctrinal requirements and defense plans; authorizes major development and production programs; makes recommendations to Politburo on the use of military forces.
General Staff	Prepares threat assessments and military force plans; formulates strategy for operation of forces and plans for wartime mobilization; oversees military planning and procurement by the military services.
Military-Industrial Commission (VPK)	Supervises and coordinates military research, development, and production.
Defense Industries Department of the Central Committee	Oversees defense-industrial performance for party officials.
State Planning Committee (Gosplan)	Formulates economic plans to fulfill military and other national requirements.
Military services	The five services formulate weapon development and production requirements; military representatives supervise the performance of research, development, and production organizations.
Defense-industrial ministries	The nine ministries develop and produce military hardware.

- The General Staff is the main executive organ of the armed forces. It apparently provides the secretariat for the Defense Council. In this role it would prepare and disseminate the Council's agenda, list of attendees, and decision papers. The staff controls information about the USSR's defense posture and current and future military plans. This information is not routinely disseminated to nonmilitary officials—unless they have direct responsibilities for defense matters. Through its Chief Intelligence Directorate, the General Staff also controls the collection, analysis, and dissemination of foreign military intelligence.

- The VPK consists of the top executives of the Soviet defense industries and a supporting staff. The VPK has detailed information and expertise on military technology and defense-industrial matters. Its staff coordinates decisions on weapon programs, but its most important function is as a troubleshooter, enforcing program schedules and ensuring that specifications are met. The VPK cooperates closely and shares information with the General Staff.
- The Central Committee exercises political supervision for the top leaders. It has independent party channels, reaching into every level of Soviet military and industrial organizations, through which it can gather information on compliance with the leaders' goals. It also influences the appointment of officials to senior military and defense industry posts.
- Gosplan is the main economic planning body. It maintains information on the plans and performance of the Soviet economy and is the final authority on the ability of the economy to meet military needs. Gosplan's internal procedures reinforce military priorities (giving first attention to military requirements in formulating plans) and limit the dissemination of defense-related information. Information on military programs is restricted to the top officials in the one department that does defense-industrial planning. Personnel responsible for civilian programs therefore have little information about military requirements and find it difficult or impossible to challenge them on technical or economic grounds.

At the next echelon are the organizations that implement decisions—the military services and industrial ministries. They do not make decisions on national policy, but they can and do influence policies through their special expertise.

The military services originate requirements for new weapon systems, and each competes with the others for missions and resources. At development and production organizations, each service has its representatives whose duties are to enforce military claims to economic resources and maintain high standards of quality control.

Managers in the defense-industrial ministries have information on development and production capabilities not routinely available to the top leaders and planners. For financial and career reasons, these officials strive to fulfill or overfulfill production plans. Participants in military programs receive bonuses and awards, and there are disincentives for converting to civilian production. At the same time, these industrial managers have other incentives that tend to retard the progress of military programs. Their fulfillment of plan targets, for example, is endangered by the introduction of innovative designs that can disrupt production. Thus, defense-industrial managers tend to be conservative unless senior policymakers intervene directly to force innovation.

The energy, political skill, and experience of these senior officials are the keys to the operation of the Soviet military policy process. Most of the senior policymakers have been associated with military affairs for many years. President Brezhnev and Defense Minister Ustinov have managed and supervised defense industries. General Staff Chief Ogarkov has been involved in arms control negotiations and military planning. Lev Voronin, the First Deputy Chairman of Gosplan in charge of military programs, is a former defense industry official with a background in the management of ground force weapon programs. These men share common experience, pride in their military accomplishments, and a stake in current programs and priorities.

**Plans, Programs, and Budgets.** Together, the decisions of these organizations and leaders determine the scope and direction of Soviet military programs. The organizations have three main activities—planning, program management, and resource allocation.

Soviet defense plans set forth the principal goals and lines of development for military forces over a specific period of time. (They set targets but do not allocate resources; separate decisions are required for this.) There are three types of plans—perspective, five-year, and annual. The 15-year perspective plans are very general and deal with broad goals rather than specific programs. Five-year and annual plans are more detailed and, in theory at least, carry the force of law.

The Soviet five-year defense plan is prepared every five years, at the same time as the national economic plan. (Although it presumably is reviewed periodically, the plan is not completely revised and extended each year as is the case with the US Five-Year Defense Plan.) The General Staff drafts it, with inputs from the military services and other components of the Ministry of Defense. Gosplan and the VPK review the parts dealing with weapon procurement before the plan is submitted to the Defense Council. We believe the plan contains a threat projection that identifies foreign military strengths and weaknesses, with particular attention to new weapon systems and capabilities that should be countered. It almost certainly includes an analysis of the current capabilities of the Soviet forces and a projection of targets for improving these capabilities and meeting the threats. [ ]

We are uncertain about the amount of detail in the plan presented to the Defense Council. We suspect that it is fairly summary, backed up by more detailed plans at lower levels. The defense plan probably contains the principal operational goals for each service and targets for the acquisition of major weapons. It probably also shows projections of military expenditures and manpower requirements and the share of national economic resources that will be required to fulfill the targets. This information would enable the Soviet leaders to assess the potential cost of their defense programs. [ ]

In drawing up the Five-Year Plan, Soviet officials base their targets for acquisition of weapons primarily on development and production programs that are under way. We have considerable information on how the Soviets manage these individual programs—more than we have on how they prepare the planning documents. A military service determines that it needs a new weapon—in response to a new threat, or because new technology opens an opportunity, or to remedy an operational deficiency. Service representatives prepare a requirement and pass it—through channels—to the industrial officials, who draw up technical proposals for meeting this need. Usually these come from a single design organization; there is little competition in the Soviet R&D system. The originator reviews the proposals and negotiates a recommended approach with the designer. The negotiations tend to concentrate

## Soviet Weapons R&D Program Management

Stage	Comment
Tactical-technical requirement	This document, prepared by the military service, sets forth purpose, operational requirements, and basic characteristics.
Technical assignment	Request for design proposals is reviewed by Ministry of Defense and General Staff and levied on a design organization (through an industrial ministry).
Technical proposal	One or more approaches are transmitted to originator of requirement through industrial ministry.
Development initiation decision	Authorizes development from draft design through prototype production, is drafted by lead design organization and includes list of participants, tasks, and deadlines. Reviewed by industrial ministries, Ministry of Defense, General Staff, and the service. Then examined by Military-Industrial Commission (VPK) and Central Committee Defense Industry Department. Major system decisions may be reviewed by Defense Council, resulting in a joint party-government decree.
Preparation for production	Usually precedes full-scale testing. Authorizes capital investment at series production plant and specifies annual production capability desired. Review similar to that for development initiation decision.
Deployment decision	Specifies number and types of weapons to be deployed. Reviewed by Minister of Defense and senior VPK and Gosplan officials. Defense Council and possibly Politburo review may follow.

on technical details and schedules rather than on basic concepts. [ ]

At this point, senior organizations and officials become involved. The lead designer prepares a draft document, which will initiate development, and sends it for review by industrial and military officials. The informal ties among participants in a program prepare the way for the first milestone, the development initiation decision.

The decision is made by the VPK (or by the Defense Council for major weapons), authorizes development from the design phase through the fabrication of test prototypes, and identifies the major participating organizations. At this point the effort gathers momentum. The Soviets decide on a single design and freeze the system's basic technology at this stage. [ ]

The next major milestone is preparation for production. This decision is made by the same officials who initiated the program. They authorize capital construction at the series production facility. This represents a firm commitment to production and often precedes full-scale testing. Once this milestone is passed, heavy resource commitments are in train. It is now extremely difficult to actually halt a program, although technical problems or a political decision can lead to delays or modifications. [ ]

At a final milestone, near the end of the test program, a decision is made on the number of weapons to be produced and deployed. Senior defense, industrial, and economic planning officials take part in this decision; and again, major systems may require explicit approval by the Defense Council or the Politburo. [ ]

Allocation of resources for programs to fulfill plan targets is made each year through the annual plan and budget. Soviet defense programs are funded primarily from the state budget. We do not know exactly how the expenditures are aggregated for scrutiny by the top leaders. One [ ]

[ ] reported a breakdown into R&D, major and minor procurement categories, and various operating expenditures. Other information suggests breakdowns by military service, organization, and geographic region. We have no evidence that the Soviets break the expenditures down according to missions like those in the US Defense Programming and Planning Categories. [ ]

**Implications for Future Defense Programs.** Although our information on Soviet military planning and decisionmaking is incomplete, we know the process has a number of characteristics that must be considered in assessments of the future defense effort:

- It is highly centralized. Top leaders are drawn into the details of military plans and programs and bear personal responsibility for their success or failure.

- Officials involved in decisionmaking on military affairs have long tenures; this gives their policies continuity and consistency. The Minister of Defense, for example, has been involved in defense-industrial matters since 1934; the Soviet Navy has had the same commander in chief since 1956.
- It is secretive. Few officials know the details of defense plans, programs, and budgets. Even the senior economic planners probably estimate total defense spending by using "rules of thumb."
- There is little incentive to review the establishment's basic priorities. Fundamental national policy reviews are required only at five-year intervals when national economic plans are prepared. Even then, the plan targets tend to reflect only incremental changes to existing programs. Budgets specify the organizations that receive funds, but not necessarily the functions for which funds are to be spent. This makes it difficult to identify waste and duplication.
- It is resistant to major alterations in plans and programs. Plans are not immutable—adjustments are always needed—but once made, they set up complex production and supply relationships that are not easily altered. Once development on a weapon begins, technical failure or an explicit high-level decision are probably the only events that would prevent its eventual deployment.
- It promotes gradualness in change. At every level of the system, success is measured by fulfillment of goals, goals are set conservatively, and risk is discouraged. This results in slow, evolutionary change and in weapons that differ little from one generation to another. [ ]

These characteristics of the Soviet decisionmaking process impart considerable momentum to military programs. They limit the ability of civilian claimants (except at the highest levels of the leadership) to challenge the military's priority access to resources. And they promote a basic continuity in the development of Soviet military power, barring radical changes in the external or internal environment for decisionmaking.



### Foreign Policy Perspectives

The Soviets regularly assert that victory over capitalism is inevitable. Their ideology and their experience predispose the Soviet leaders to see an overall historical trend in international affairs in their favor. Since World War II there have been several major events that the Soviets identify as marking a favorable shift in the international "correlation of forces." These include Soviet acquisition of hegemony over Eastern Europe, the collapse of European colonial empires, the USSR's growth as an economic and military power (especially the change in its strategic nuclear position vis-a-vis the United States) and the decline in US dominance among non-Communist nations. ☐

When viewing their postwar foreign policies in this long-term context, Soviet leaders probably would evaluate them as largely successful. They were able simultaneously to expand their power and influence in the Third World and to stabilize—through long-term efforts to build arms control and trade connections—their relations with the major Western powers. But as those leaders view the international scene today, they also perceive growing strategic threats, a continuing possibility of setbacks, and probably a higher risk than in the past of wars involving Soviet forces. ☐

As they review their military plans for the 1980s, Soviet leaders have a number of specific foreign policy concerns. They are apprehensive about the new administration in Washington and about what they perceive to be a growing anti-Soviet mood in the United States. The Soviets expect that US relations with other NATO members will continue to be strained by differences on such issues as the conception of detente and the definition of the common security problem—let alone the sharing of its expense. They know they cannot count on this strain continuing, however, and are concerned that US leadership may restore NATO's cohesion and that the Alliance will seek to extend its geographical area of operations well beyond the traditional perimeter. ☐

The Soviets are also deeply concerned about events in Eastern Europe—the challenge to Communist Party authority in Poland, the Romanians' continuing opposition to them on foreign and military policy issues, and the economic slowdown in the East European countries that increases the burden of empire. They see

China as a determined and increasingly effective opponent. The possibility of Sino-US military cooperation has arisen, a threat the Soviets take so seriously that it is the one policy issue they have "linked" with SALT. And they are concerned that the Japanese may increase their defense effort. ☐

The Soviet leaders also see increasing instability in the Third World and believe that this will provide problems as well as opportunities. They have been unable to suppress the insurgents in Afghanistan, and the world reaction to their military presence there has been harsher than they expected. Moscow clearly benefits from the expulsion of the United States from Iran and sees the potential for increasing its influence there over time. Nevertheless, the Soviets are concerned that the Islamic revolution may affect the USSR's Muslim population and that instability in the region may lead the United States to build up its military presence. ☐

"Uncertain" is therefore the word for current Soviet foreign policy perspectives. This uncertainty is more profound than a simple lack of knowledge about what the new US administration will do, although that is a central factor in it. Whatever economic and political strategies Moscow may devise to deal with the uncertain international situation, its military policy must stress preparedness and anticipate a decade of heightened competition—with the risk of actual conflict. ☐

### Current Military Strengths and Weaknesses

In evaluating their military preparedness for this uncertain environment, the Soviet planners would begin with an evaluation of the current strengths and weaknesses of their forces. For this evaluation, they probably would choose a worst case scenario—involving a large-scale conflict against NATO and China, with probable escalation to intercontinental nuclear war and possibly a military action in a peripheral area at the same time. ☐

This scenario would place heavy demands on Soviet forces:

- For strategic offensive forces, the planners will want a capability for strikes at enemy nuclear and other military targets, in a variety of modes (preemptive, retaliatory, or launched on receipt of warning of enemy attack), plus enough flexibility to support

options ranging from a single all-out strike to a series of exchanges over several weeks.

- Strategic defensive forces would have the missions of limiting damage by warding off ICBM, SLBM, and air attacks as far as possible and thus ensuring (together with passive civil defense efforts) the survival of the USSR as a political and economic entity.
- Theater air and intermediate-range bomber forces would be charged with the early attainment of air superiority and destruction of the enemy's nuclear delivery systems and weapons and his command and control facilities; they would also conduct nuclear and conventional strikes in support of ground force operations.
- The Ground Forces would carry out a massive and rapid ground offensive into NATO territory to defeat NATO forces, disrupt mobilization, and seize or destroy ports and airfields to prevent reinforcement. If China entered the conflict, they would invade and occupy portions of northern China to safeguard Soviet territory and lines of communications. In both theaters, the Ground Forces would be expected to carry out operations, either conventional or nuclear, after only a few days for mobilization.
- General purpose naval forces would have the missions of neutralizing enemy aircraft carriers and ballistic missile submarines in the opening stages of a war, protecting their own ballistic missile submarines, controlling the sea approaches to the Soviet Union, supporting ground force operations, and disrupting enemy sea communications by attacking European ports and merchant ships near the Eurasian periphery. If the war continued and the Navy performed its immediate tasks, it might assign more forces to interdicting the enemy's lines of communications in the open ocean in order to tie down enemy naval forces.
- If the need for intervention or counterinsurgency operations elsewhere arose during a full-scale war in Europe and the Far East, the burden of supporting the lower level involvement would fall on the ground and tactical aviation forces, assisted by airlift or sealift forces. ☐

Measuring their forces against these heavy demands, the planners probably see a number of important strengths as well as some major difficulties ☐

The Soviets probably consider that their intercontinental offensive forces could destroy the bulk of US land-based missiles in a counterforce strike. Moreover, they probably believe that because they have expanded and hardened their force of land-based ICBMs most of them could survive a US first strike. When their SLBM and bomber weapons are added, the Soviets could expect to have several thousand weapons available for retaliatory strikes even after absorbing a US surprise attack. The surviving weapons would have the capability to destroy a large percentage of US military or economic targets. ☐

In addition to those weapons of intercontinental range, the military has peripheral strategic missiles and aircraft with several thousand weapons that could be used against targets in Europe and Asia ☐

Soviet planners probably consider that their air defense network could perform well against enemy aircraft attacking at high and medium altitudes. They probably also believe that their civil defense program, given sufficient time to implement sheltering and evacuation, could provide for the survival of the political leaders and a large percentage of the essential work force, as well as reducing by tens of millions the immediate casualties from a large-scale attack. ☐

The planners know that the Warsaw Pact ground forces in Central Europe are numerically superior to NATO's in men, tanks, and artillery. Moreover, the Soviets probably consider their own most modern ground force weapons to be technologically equal or superior to NATO's. They probably judge that, if supporting air and naval operations were successful, the Pact ground forces could absorb a NATO assault and rapidly advance into Western Europe. They probably also judge that the Soviet ground forces along the Sino-Soviet border could effectively repulse a Chinese attack. ☐

The Soviets probably believe that coordinated operations by missile-equipped surface ships, submarines, and naval aircraft give them a good capability in nuclear war to counter the threat from Western air-

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craft carriers. They probably also believe that they can effectively prevent amphibious landings on Soviet territory. ☐

Despite these genuine strengths, Soviet planners also know that their forces would have major difficulties in attempting to fulfill many of their wartime tasks. They probably doubt that their ballistic missile early warning network can provide reliable warning of a US ICBM launch and therefore do not have high confidence that they could launch most of their own ICBMs before the enemy weapons struck. Even with adequate warning, the ABM defenses at Moscow are limited and could not protect against a large-scale missile attack. The current Soviet air defense weapons are of limited usefulness against low-altitude attack, and the naval forces have almost no way of detecting and attacking ballistic missile submarines. ☐

The theater air forces could do considerable damage to NATO's air defenses but probably could not achieve early air superiority. Without Pact air superiority, the Ground Forces would have much more trouble attaining their objectives. Moreover, the planners still probably consider the tactical nuclear balance precarious in Central Europe, despite recent Soviet improvements. They could not be confident that the Pact would prevail in a conflict confined to battlefield nuclear weapons and are concerned that they might have to resort to systems based in the USSR. ☐

On the Eastern front, the Soviets probably consider their forces inadequate to hold Chinese territory for extended periods. An overall concern is that having to maintain large forces on the Sino-Soviet border reduces their flexibility for operations in other areas. ☐

Soviet naval planners probably consider their forces inadequate to ensure the destruction of enemy carriers in a conventional war and to carry out such secondary tasks as the interdiction of the sea lanes. They probably are also concerned about the vulnerability of their ballistic missile submarines to attack by enemy submarines and of their surface forces to attack by submarines and aircraft. They probably consider their limited sealift capability inadequate to the potential demands on it. ☐

### Perceptions of Future Military Threats

In estimating their requirements for new military programs, Soviet planners will take into account not only the condition of their own forces, but also improvements under way in or planned for US, NATO, and Chinese forces. They will attempt to structure their forces to preserve their strengths in the face of these postulated threats and to prevent their enemies from exploiting Soviet weaknesses. Probably they will make conservative (worst case) estimates of future threats and for planning purposes will project Western weapon programs even though the governments involved may not yet have approved them for development. ☐

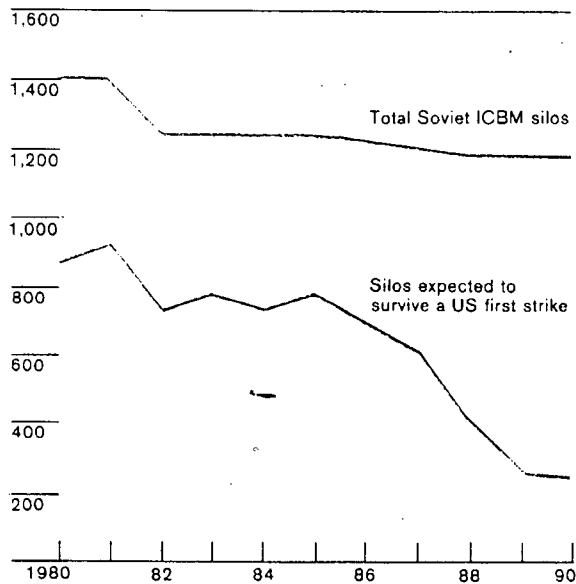
For their strategic attack forces, the Soviets' principal concern will be the possible erosion of some of the gains they have achieved at great cost over the past two decades. They see the possible US deployment of the M-X missile on mobile launchers or in multiple protective shelters as a serious threat. If they considered a counterforce strike, the basing mode of M-X could force the Soviets to aim virtually all of their ICBM weapons against all of the possible shelters, including empties, and this would leave them few weapons for other targets. When they evaluate the possibility of a US counterforce strike, they see the accuracy of M-X as an increased threat to their own ICBM force. (ICBMs make up over half of Soviet intercontinental delivery vehicles, and their warheads provide nearly 75 percent of the weapons.) The chart, opposite, shows our calculations of the M-X threat to Soviet ICBMs. ☐

Other Western strategic programs in areas of Soviet weaknesses also worry Soviet planners. Deployment of the Trident submarine will expand the potential operating areas of US (and possibly UK) <sup>11</sup> ballistic missile submarines (see map, page 54). This will make even more difficult the Navy's task of locating and attacking these submarines in the open ocean. The French plan to improve their SSBN force, which is also of concern to the Soviets. They see the planned US introduction of strategic air-launched cruise missiles as weakening their air defenses, just as they have begun to achieve modest gains in low-altitude capabilities.

<sup>11</sup> The United Kingdom currently has several Poseidon SSBN/SLBM systems and may acquire the Trident missile. ☐

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# **Survivability of Soviet ICBM Silos if Attacked by US ICBMs, 1980-1990**



These calculations assume that the United States deploys the M-X ICBM in the numbers and with the warheads and accuracies currently planned; they also assume that two M-X warheads would be aimed at each target silo. The total number of missiles and silos on each side is calculated according to the limits of the SALT II Agreement.

The possible US deployment of an aircraft with a low radar cross-section—the so-called Stealth—would further complicate Soviet air defense problems.

The Soviets are concerned about the growth and modernization of Chinese nuclear forces. They monitor these forces closely, but probably are uncertain about their exact size and location. Soviet planners probably project steady growth in the Chinese inventory of land-based missiles. They probably also estimate that the Chinese will procure at least two ballistic missile submarines in the 1980s. This would increase the capability

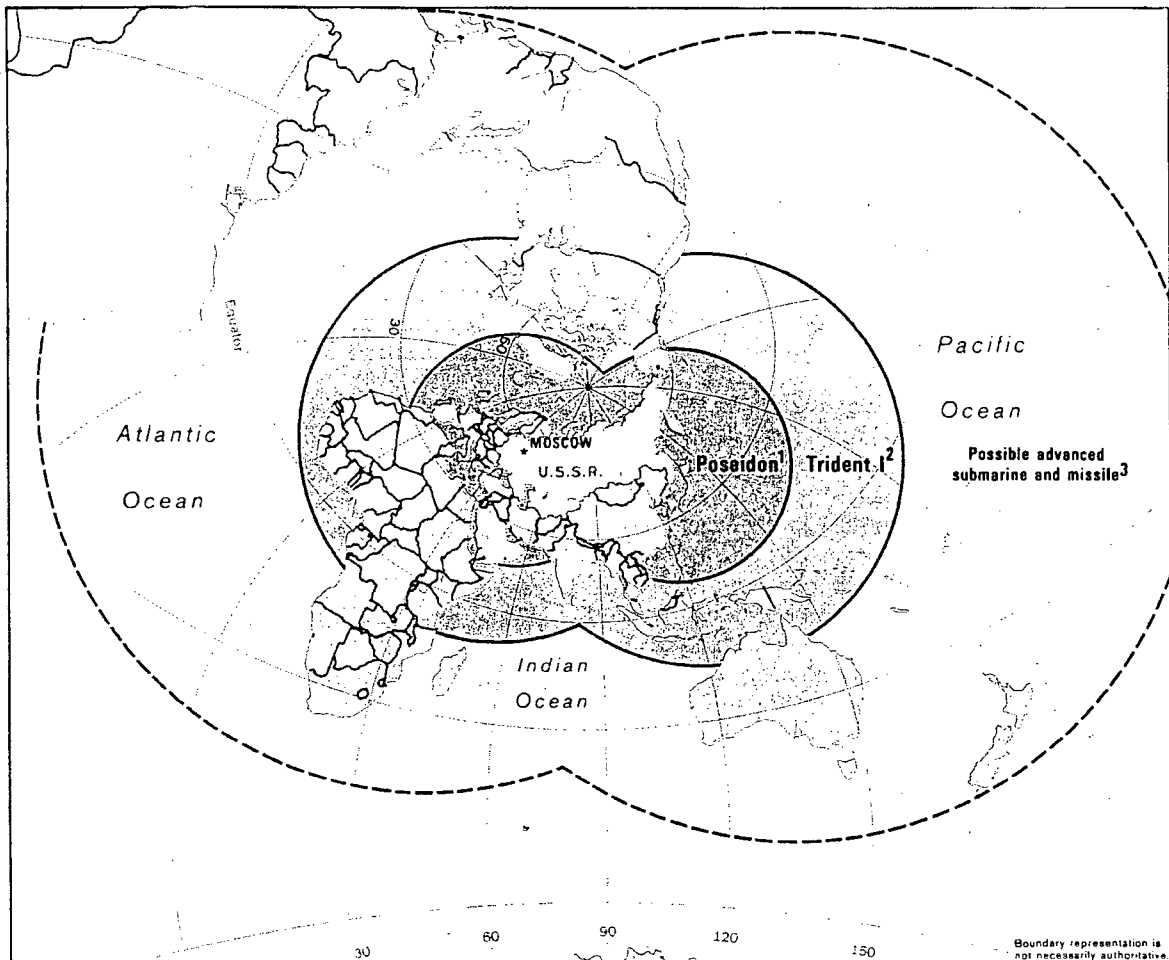
of China to absorb a nuclear attack and still retaliate with nuclear weapons. Soviet planning must also take into account the addition of tactical nuclear weapons to the Chinese arsenal.

Another problem of particular concern to Soviet planners is the NATO decision to deploy 108 advanced Pershing ballistic missiles and 464 ground-launched Tomahawk cruise missiles in Europe. The Soviets see this decision as part of a US plan to improve its counterforce capabilities against Soviet strategic systems. The deployment of these new US nuclear weapons would complicate Soviet planning in several ways:

- Their range would permit attacks on key Soviet military targets, including 60 percent of the SS-19 launchers, 45 percent of the SS-17 launchers, and many of the hardened command posts in Eastern Europe and the Western USSR.
- The short flight of the Pershing would provide little warning of a NATO attack on targets in the USSR.
- The small size and the low flight profiles of the Tomahawk would tax Soviet air defenses, and the Soviets are concerned that its deployment could be expanded in the future, possibly to include other regions or launch by aircraft and ships.
- Their mobility and their deployment in a number of NATO countries would increase the demands on Soviet air forces for attacking NATO's nuclear assets at the beginning of a war.
- They would increase NATO's ability to carry out nuclear conflict against the USSR without using US intercontinental forces.

NATO has planned other force improvements that are of concern to the Soviets. They regard NATO's programs for upgrading theater forces as substantial and technologically challenging. They are concerned in particular by planned improvements in NATO's armor and antiarmor systems and in precision munitions and nuclear systems. Enhanced radiation (neutron) weapons are viewed as particularly threatening to Pact armored forces. The Soviets have high regard for the technical capabilities of NATO's tactical aircraft and

# Ocean Areas From Which Western Ballistic Missile Submarines Could Attack the USSR



<sup>1</sup>Both the US and UK Navies have the Poseidon.

<sup>2</sup>The first Trident weapon system (an Ohio-class submarine armed with Trident C4 missiles—also known as Trident I missiles) is to enter the US force in 1981.

<sup>3</sup>A weapon system referred to as Trident II, with a new or variant submarine and missile, is under study but not yet programmed for development.

air defense systems and consider these to be areas in which they must accelerate their efforts.

In naval forces, Soviet planners are worried about US ASW capabilities, and particularly about the threat posed by US forces to Soviet ballistic missile submarines. They believe that the United States has reduced some of the Soviet advantage in antiship warfare by deploying cruise missile defense systems and long-

range carrier patrol aircraft and that the margin will be further reduced by widespread US deployment of the Harpoon antiship missile. In their view, the possible deployment of the Tomahawk long-range cruise missile on surface ships and submarines could turn every US vessel into a strategic weapon system and seriously undermine the Soviet Navy's ability to attack sea-based nuclear delivery systems at the outset of a

war. And Soviet naval officers continue to be concerned about the vulnerability of their own surface forces to enemy air and submarine attack. [ ]

Instability on Soviet borders and US discussions of forming a rapid deployment force have brought home to Soviet planners the need to be prepared for conflict in areas other than the traditional European and Far East theaters. They probably have evaluated the capabilities of their forces against indigenous and Western opposition in such areas as the Persian Gulf. The complex international environment that the Soviets anticipate in the 1980s and their information on Western plans to upgrade capabilities for distant operations probably will be increasingly important factors in Soviet planning for force developments in the 1980s. [ ]

#### The Use of Arms Control Negotiations

In the past, Soviet leaders have integrated force planning and arms control negotiating strategies well, and we expect them to continue. They are organized to facilitate this integration. Decisions on arms control (like all other aspects of security) are made in the Politburo and Defense Council, and the military and defense-industrial establishments have major roles in formulating the details for their execution. Personnel of the Ministry of Defense, General Staff, and VPK work on preparing negotiating positions and serve on negotiating teams like the SALT delegation (where they handle most substantive matters related to military forces and weapons). For example, L.V. Smirnov, head of the VPK, was a key figure in the final SALT I negotiations at the 1972 summit. [ ]

The Soviets have used arms control proposals in several ways:

- Some are propaganda vehicles intended to complicate Western debates on defense policy or to enhance the USSR's "peace-loving" image. Examples are the recurring proposals at the United Nations for "general and complete disarmament" and reductions of military budgets.
- Others, such as the treaties dealing with the seabed and outer space, were intended to foreclose an area of military competition in which the Soviets had little

prospect of achieving important capabilities; in part these proposals reveal Soviet respect for Western military technology.

- Some negotiations have been used to influence the course of Western military programs or to limit the responses of the West to the growth of Soviet power. Talks on mutual and balanced force reductions (MBFR) in Central Europe, the nuclear test ban negotiations, the dialogue on deployments in the Indian Ocean, and the recently initiated theater nuclear force (TNF) discussions probably fall into this category. Such negotiations, in the Soviet view, help to create a predisposition in the West to see the growth of Soviet power as legitimate and natural.
- Still other arms control agreements were seen as stabilizing the international environment and reducing the risk of unintended conflict; the Non-Proliferation Treaty and the Agreement on the Prevention of Nuclear War are examples. [ ]

The Soviets have been most willing to move ahead on arms control negotiations that they saw would forestall important US strategic gains. Thus, they sought in the ABM Treaty to halt the momentum of a deployment program in which they perceived a US advantage, while retaining the option to conduct their own vigorous ABM R&D program. In negotiating agreements on strategic offensive arms, Soviet leaders have resisted any wording that would oblige them to alter their basic military doctrine and their basic policies on force development and deployment. When compelled in SALT to make a choice, they usually have reduced their demands for constraints on US programs rather than accept constraints on their own highly valued production and deployment programs. [ ]

The Soviets have shown some willingness to discuss limitations on new types of weapons before they have initiated programs to develop and procure them. But once they have made a commitment to produce a weapon (this usually occurs before full-scale testing begins), the Soviets have resisted proposals to prohibit its deployment. [ ]

In negotiating agreements, the Soviets have gone to considerable lengths to preserve their options for developing forces and responding to threats without a need to violate agreed provisions. They often prefer ambiguous language, and they are less interested than the United States in measures for verifying compliance with agreements. The Soviets consider themselves bound only by mutually agreed restrictions, and they consider as permissible all activities not expressly prohibited. They interpret restrictions literally and, if possible, to their own advantage, exploring on occasion the limits of US sensitivities on compliance. ☐

Economic incentives clearly play a role in the Soviet approach to arms limitations. Evidence of the relative weight of this factor is meager, but in the past it appears to have been outweighed by political and strategic concerns. Arms control agreements have not reduced the overall growth of Soviet military expenditures—there were no reductions in spending, for example, following the 1972 SALT accords. ☐

We expect the Soviets to continue their emphasis on arms control in the 1980s. In contrast to the 1970s, when the growth of the Soviet economy matched or exceeded the increase in defense spending, the Soviets will face slower growth and increasing economic difficulties in this decade. Even though this may increase the Soviets' interest in arms control as an instrument of national security policy, they will continue to negotiate cautiously. They know that any saving they may realize from arms control would be only a small portion of their defense expenditures, but they probably anticipate economic benefits of some kind. If an agreement reduced their uncertainty about future Western defense programs, the Soviets might feel that they need not incur the additional costs of developing and deploying certain systems. ☐

We believe that strategic factors will continue to dominate Soviet arms control policy and that in the 1980s they will strive to strengthen their areas of military advantage and overcome their weaknesses. It is difficult to predict the effect of arms control efforts on Soviet force development, however, because these efforts will be directly affected by the actions of other parties, including the United States. To deal with this uncertainty, we treat arms control restrictions as a variable in the sections on future force alternatives. (S)

### The Political Succession

Leonid Brezhnev, now 74, has led the Communist Party of the Soviet Union for 16 years. His pre-eminence has grown since the early 1970s as important posts have gone to leaders closely associated with him. At the 1981 Party Congress this team was reelected unchanged. Age and health make the prospects poor for Brezhnev's continuing in office for more than a few years. At his departure, the remaining leaders will begin a struggle for dominance, because neither law nor custom provides for the orderly transition of power in the USSR. ☐

This struggle could lead to changes in Soviet policies, including military policy. Changes in the structure of military forces have followed the last two political successions. Several years after Stalin's death, Khrushchev reoriented the forces and defense industries toward nuclear and missile weapons. In the mid-1960s, when Brezhnev and Kosygin took power, they acceded to the military planners' requests for greater attention to conventional forces (while continuing the emphasis on strategic nuclear forces). ☐

It is inherently impossible to predict the nature and timing of changes in military policy that might result from Brezhnev's replacement. His successors might initiate major departures from past policies, in response particularly to some development in the fluid international situation or to the distressing Soviet economic prospects. But without clear evidence to guide our judgments, we must fall back on historical precedents and our admittedly imperfect understanding of the policy positions of potential Soviet leaders. ☐

Our task is complicated by the fact that most of Brezhnev's associates are in their seventies and several are in poor health. Most of the men who would make the succession decision are themselves likely to be replaced in the next few years, and in the course of the 1980s, a whole new generation of leaders will move into senior positions. These men may have backgrounds and values considerably different from those of the current leaders. ☐

We know little about how Brezhnev's possible successors view specific national security matters. In any case, the decade will be well along before much real change is likely to take place. New political leaders

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Potential Successors to Brezhnev

*A. P. Kirilenko, Party Secretary*



Snafoto

*K. U. Chernenko, Party Secretary*



Wide World

*V. V. Shcherbitskiy, Ukrainian Party First Secretary*



Snafoto

*G. V. Romanov, Leningrad Party First Secretary*



Poster

*V. V. Grishin, Moscow Party First Secretary*



Wide World

*M. S. Gorbachev, Party Secretary*





## The Military Succession

*It is likely that several of the key Soviet military leaders, including the Minister of Defense, will be replaced over the next several years. Minister of Defense Ustinov, 72 [redacted] He was out of sight for about six weeks in 1980, and his functions were carried out by First Deputy Nikolay Ogarkov.*

*We can identify several possible candidates to succeed Ustinov. The front runner is General Staff Chief N. V. Ogarkov, who has risen rapidly in recent years and seems to enjoy Ustinov's confidence. Ogarkov has been a member of the Soviet SALT delegation and has had more contact with Westerners than any other possible candidate. As head of the General Staff, he has maintained a low profile and has given the impression of being a businesslike manager and a loyal party man. Ogarkov may be vulnerable to criticism, however, for his handling of Soviet military operations in Afghanistan.*



*Probably the next most likely candidate is Viktor Kulikov, former Chief of the General Staff and now Commander in Chief of the Warsaw Pact Armed Forces. Kulikov has kept his distance from the Afghan problem and has a reputation as an outspoken and forceful leader. When he headed the General Staff, he was a vociferous proponent of his organization, and he might play a similar role as head of the Ministry of Defense. The appointment of Kulikov to replace Ustinov could signal a more aggressive Soviet military policy and a tougher stance on arms control.*



*There is an outside chance that the next choice for Minister of Defense might not be a professional military officer. If so, L. V. Smirnov, head of the Military-Industrial Commission, would be a logical candidate. Smirnov has been a close associate of Ustinov and is apparently a hard-working, well-organized manager with a sound grasp of Soviet defense programs. Smirnov was deeply involved in negotiating some of the final details of the SALT I agreements; at the meetings he showed considerable technical knowledge but little sensitivity to political issues. His accession to Ustinov's position could result in a measured, conservative approach to defense policy and an attempt to integrate military and industrial planning more fully.*



presumably would need time to consolidate their power before trying to effect major defense policy changes—if they desired to. In addition, even if new initiatives were undertaken soon, long leadtimes are required to procure and field modern military forces, and it would take years to change the structure of Soviet forces significantly. [ ]

We suspect that, if the political succession occurred soon, it would have two phases. The first would be the replacement of Brezhnev as party chief by another senior leader, perhaps for a period of several years. The most likely candidates for this immediate succession are close associates of Brezhnev. These men appear likely to share his general attitude on national priorities, despite some perceptible differences in outlook. [ ]

**Near-Term Prospects.** Among the potential candidates, Party Secretary Andrey Kirilenko seems best situated to replace Brezhnev, at least on an interim basis. His age, 74, seems to rule him out as a long-term leader, but at the moment no other contender can match his qualifications. As unofficial deputy, Kirilenko has often performed the duties of General Secretary during Brezhnev's absences. He oversees the staffing and operations of party organizations throughout the country, has primary responsibility for the supervision of heavy industry, ranks second only to Brezhnev as party spokesman on economic matters, and has had experience in international Communist Party affairs. [ ]

Kirilenko's foreign policy statements over the years suggest an inclination toward an aggressive Soviet policy. He has endorsed Brezhnev's efforts to improve Soviet-US relations but has been suspicious of Western motives. He has been critical of the Chinese and is one of the Soviet leaders least tolerant of East European tendencies to deviate from Moscow's guidance. Kirilenko also has a conservative outlook on domestic matters. He has firmly supported a strong defense posture and preferential development of heavy industry. [ ]

Although the broader perspective of the General Secretary's post could alter his views, it currently appears that a Soviet regime led by Kirilenko might place less

emphasis on detente with the United States and be less willing to look for possible compromises in a strategic arms negotiation. [ ]

The other leading candidate is Konstantin Chernenko, a Party Secretary who formerly was an aide to Brezhnev and remains a close confidant. Chernenko, 69, has risen rapidly in recent years. He is one of five in the Soviet hierarchy (Brezhnev, Kirilenko, Mikhail Suslov, and newcomer Mikhail Gorbachev are the others) who are both party secretaries and full members of the Politburo. Chernenko probably owes his rapid advance to Brezhnev's growing reliance on him and to an attempt by Brezhnev to balance Kirilenko's ambitions. Chernenko's status in the leadership appears to have fluctuated in recent months, but he could emerge as a compromise candidate if the Politburo has difficulty agreeing on a new General Secretary. [ ]

Chernenko has staunchly supported the improvement of relations with the West, particularly with the United States. In speeches, he has gone further than any other leader except Brezhnev in stressing the importance of SALT and in calling attention to the potential economic benefits of arms control. On domestic issues he has a populist image and has argued for improving economic performance through better leadership. [ ]

**Longer Term Prospects.** Eventually a younger leader will accede to the top party post, either following an interim successor or immediately after Brezhnev (if he outlasts his senior colleagues). There are several men who are less likely than either Kirilenko or Chernenko to follow Brezhnev in the short run, but could eventually emerge as successors:

- Vladimir Shcherbitskiy, 63, is the Ukrainian party leader and a longtime political associate of Brezhnev. He has taken a fairly hard line on national security matters.
- Leningrad party leader Grigoriy Romanov, 58, is one of the youngest Politburo members. He usually takes a hard line on defense issues and has a reputation for fostering innovative methods of economic management.

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- Viktor Grishin, the Moscow party boss, is 66 and suffered a heart attack in 1973. Thought to be conservative on most issues, he is one of the least known contenders; we have no direct evidence on his defense policy views.
- Mikhail Gorbachev, 50, is the youngest of the top leaders and is responsible for agricultural policy; his views on defense and national security issues are unknown. He reportedly has opposed liberalization in Eastern Europe.

During the succession period, Soviet decisionmaking would probably be more collegial than it is now. Leaders would watch each other's positions closely, and policy issues could become political instruments as the leaders maneuvered for advantage. All would be wary of allowing any one member too much initiative or power. Variations in policy could occur, but it would be difficult to change basic priorities until a new leader could consolidate power. During the jockeying period of collective leadership, the defense effort probably would not be significantly redirected. Few aspirants for the top post would risk antagonizing the professional military or placing themselves in a position to be accused of selling defense short.

#### Economic Factors

**Resource Constraints.** The resource constraints facing Soviet leaders will become more severe in the 1980s, with potentially disruptive political consequences. The Soviet strategy for economic development—which has been based largely on the forced mobilization of capital and labor—has been losing effectiveness since the 1950s. A slowdown in growth, which affected nearly all sectors of the economy, continued through the 1960s and 1970s, and has been particularly severe in the last few years.

The Soviet slowdown reflects exhaustion of the resources that fostered rapid development, especially the abundance of labor, fuels, and raw materials. More importantly, it reflects a long-term decline in overall productivity: output per combined unit of capital and labor, which had increased at an average annual rate of nearly 1 percent during the 1960s, fell by nearly 0.5 percent per year in the 1970s. The decline was symptomatic of underlying deficiencies in the centrally

planned Soviet economy—deficiencies which include an inability to foster technological innovations and to motivate the work force.

In 1979-80 the Soviet economy slowed to a crawl. The average annual GNP growth rate in 1979 and 1980 was 1.2 percent—the lowest for any two-year period since World War II. The poor performance was due in part to unusually harsh weather during the winter of 1978/79, but even with better conditions in 1980, the economy rebounded only slightly. The economic plan for 1981 (approved in October 1980) reflects scaled-down expectations, but prospects for achieving even the reduced targets are poor.

The Soviet leaders must begin to deal with a shortage of labor. Birth rates in the USSR declined in the 1960s, and recently this has begun to be reflected in a fall in the number of young people entering the labor force. The problem will become much more acute in the mid-1980s; by then the working-age population will be growing at less than 0.5 percent annually (compared to about 1.7 percent in the 1970s). Excess farm labor has long since been siphoned off to develop other sectors, leaving a rural population that is already inadequate and includes a disproportionate number of elderly, unskilled field hands.

A further complication of this demographic problem is that nearly all of the increase in the labor force in the 1980s will be among non-Slavic (principally Turkic) minority populations. These people are strongly disinclined to migrate from Central Asia to the labor-short industrial areas in the European or Eastern USSR.

The supply of oil will be Moscow's most critical natural resource problem in the 1980s. New fields are being found and developed too slowly to offset the depletion of older fields. Production may now be peaking; we expect a decline to begin in the next few years and continue through the decade. The discovery of new fields may arrest the decline eventually, but the areas of potential deposits are remote, and their exploitation will require massive investments in infrastructure.

Production of such other energy sources as coal, hydroelectric power, and atomic energy is being pushed about as hard as Soviet industrial capabilities permit,

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***Economic Prospects in Eastern Europe:  
Implications for Military Planning***

*Like the USSR, the non-Soviet Warsaw Pact (NSWP) countries are facing economic difficulties. In the 1970s all of them experienced an economic slowdown that worsened as the decade progressed. The causes were many—the inherent inefficiency of the economic planning systems played a role, as did rising prices for energy, raw materials, and imports of technology from the West.*

*In several countries the economic situation was aggravated by mounting hard currency balance-of-payments deficits and continuing poor performance by the agricultural sectors. In Poland, labor unrest affected industrial production and upset economic plans. The East European economies are likely to experience further slowdowns in the 1980s, and living standards will stagnate or decline.*

*The Soviet Union has been pressing the NSWP countries to accelerate the growth of their defense spending and to modernize their forces more rapidly in the coming five-year period (1981-85). East Germany has given some indication that it may comply. But because of economic problems, most NSWP countries probably will not fully satisfy the Soviet demands. Romania has publicly rejected the Soviet call for more defense spending, and Poland, Hungary, and Czechoslovakia will have difficulty even matching the past decade's average growth, let alone surpassing it.*

*Soviet pressure and their own efforts to remedy current force deficiencies probably will cause all the NSWP countries to experience real growth in their defense budgets. Overall, however, the average real growth in NSWP spending for the armed forces is unlikely to exceed that achieved in the 1970s, and the pace of military modernization is likely to fall short of Soviet goals.*

[ ]  
with the help of imported Western equipment. The Soviets are attempting to conserve oil, but large sources of savings are difficult to identify (most automotive transport, for example, already is for commercial and industrial rather than private use). Even with conservation efforts and vastly increased investment in fuel production, the growth of domestic energy production will fall short of demands in the 1980s. (U)

Still other economic problems confront the Soviet leaders. Weather was better than average during most of the Brezhnev era, but in the past few years poor weather has wrecked harvests and disrupted transportation. If weather over the Soviet land mass returns to the long-term pattern, harvests could regularly fall well below requirements. This could complicate the foreign trade situation by forcing Moscow to increase grain purchases at a time when oil, its principal hard currency export, will be scarcer. [ ]

Finally, the Soviets face rising costs for other fuels and raw materials as well as oil. This is because of depletion of reserves west of the Urals and the high cost of developing resources in Siberia and Central Asia. [ ]

Under these circumstances, we expect the Soviet economy of the 1980s to be very different from that of the 1970s. In the past, although it grew more and more slowly, its growth permitted the policymakers to increase both defense spending and investment and still have enough left over for some gains for the consumer (however small). Over the next several years, however, developing demographic and energy problems will combine with the difficulties of longer standing to make a particular dent in growth. The annual growth increments in the 1980s will be smaller than in most of the 1970s; Soviet leaders will have to make tougher choices among defense, investment, and consumption; and the political competition for resources is likely to become more intense. [ ]

**Possible Economic Effect of Constraints.** It is difficult to forecast the precise impact of labor and energy shortages on Soviet economic growth. We have, however, used econometric models to make simulations of Soviet economic performance over this decade. These models, although subject to uncertainty, help us to gauge the general magnitude of Soviet economic problems and the impact of various policy options on economic growth. [ ]

Our simulation (see table at right) suggests that Soviet economic growth will slow to a real average annual rate of 2 to 2.5 percent through 1985 and to less than 2 percent from then through 1990. Growth in investment and per capita consumption would also fall short of past trends. [ ]

If defense spending continues to increase at its historic rate while economic growth slows, the share of Soviet economic output devoted to defense will increase. The defense share of GNP, which was 12 to 14 percent in 1980, could be a percentage point higher in 1985 and three or four points higher by 1990. Moreover, the defense share of the annual increment to GNP could increase from about one-fifth now to between one-fourth and one-third in the mid-1980s and to as much as three-fourths by the end of the decade. This would drastically reduce the ability of the Soviet leaders to allocate additional resources to investment and consumption and would erode the annual growth dividend that has been so important in the past in easing political tensions that arise from the competition for resources. [ ]

Soviet leaders are concerned about their economic prospects, and some—notably Party Secretary Chernenko—have linked economic problems directly to the costly defense effort. In October 1980 Brezhnev called on the defense-industrial R&D community to assist the civil machine-building sector in developing more effective products of higher quality. His speech probably does not signal a shift in the longstanding priority accorded the Soviet defense sector nor imply a significant transfer of resources. Nevertheless, it may portend an increasing interest among the Soviet leaders in moderating the economic impact of their defense programs. (U)

**Trends in Soviet Economic Performance<sup>a</sup>**  
(Real average annual rates of growth, percent)

	1961-70	1971-80	1981-85	1986-90
GNP	5.2	3.3	2.0 to 2.5	Less than 2.0
Investment	6.8	4.9	About 2.5	About 2
Per capita consumption	3.9	2.3	About 1.0	About 0.5

- <sup>a</sup> This table compares historical data on Soviet economic performance with data from a simulation of economic growth in the coming decade. Our simulation is based on the following assumptions:
- Soviet oil production begins to decline in the next few years, falling to 10-11 million barrels per day in 1985 and to 7-9 million by 1990.
  - Soviet exports of oil to Communist countries remain stable through 1985 at nearly 2 million barrels per day and decline to about half that amount by 1990.
  - Soviet oil imports are restricted by the availability of hard currency.
  - The use of capital falls when an energy gap emerges.
  - Defense spending increases about 4 percent through 1985 (a rate consistent with past trends and with current evidence on Soviet defense programs) and then moderates slightly to more closely match the rate of growth of the economy. [ ]

Changes in defense spending, in themselves, are unlikely to provide a solution to the economic problems that the Soviets will face in the 1980s. Nor do Soviet leaders appear to view reductions in defense spending as the cure for their economic ills. Instead, Moscow seems to believe that a variety of marginal changes in many sectors of the economy are needed to reverse the declining trend in economic growth. Thus, while the leaders are unlikely to make major shifts in allocation, some tinkering at the margin seems feasible. Some slowdown in the growth of defense expenditures could facilitate marginal increases in the growth of investment or consumption at a time when even small increases could be particularly significant. [ ]

The trade-offs between the growth of defense spending and the availability of economic resources are illustrated in gross terms in the three panels in the chart on page 64. The curves in the first panel were derived from a simulation of the trade-off between various rates of growth in defense spending through 1990 and the resulting rates of growth of Soviet GNP in the first and second halves of the 1980s. The curves are nearly horizontal, indicating that a change in the growth of

### *The Soviets' Perceptions of Their Economic Problems*

*We do not know exactly how the Soviet leaders assess their own economic performance and the trade-offs between defense and civilian economic activities. We know that their economic concepts and measures, which are Marxist in origin, differ from those that we use to assess Soviet economic performance and show a slightly higher rate of economic growth. Both Soviet and Western figures, however, show a persistent decline in rates of growth, and it is this trend that is most worrisome to Soviet leaders. A slowdown in growth, however gradual, will make policy choices more difficult and will increase tensions among rival claimants. The targets for the 11th Five-Year Plan (1981-85) indicate that the leaders recognize that growth will continue to decelerate in the future.*

*The Soviet leaders have taken note of the fact that growth in consumption is falling and that increases in labor productivity—a key to keeping economic growth at adequate levels in the 1980s—will be difficult to achieve unless more consumer goods can be made available. They also recognize that their energy prospects are uncertain. Probably they hope that oil production can be maintained at current levels or even increased slightly but fear that the more pessimistic*

*Western projections may prove to be right. The leaders also admit that their agricultural problems are intractable and probably foresee another decade of unreliable performance from the farm sector.*

*The Soviet leaders, then, are clearly concerned about their economic future, and they have identified the key problem areas. They have not shown, however, any inclination to take radical action in response to their problems. This is probably due principally to the leaders' close personal identification with the current system and policies—an involvement that makes it difficult for them to accept extremely pessimistic forecasts. Moreover, they seem to be optimistic about the long-term growth prospects. In their view, the 1990s will offer some relief—increments to the labor force will rise again, albeit less rapidly than in the 1970s, and (assuming their investment strategies are successful) new energy resources may be available. The Soviet ability to view the 1980s as part of a continuum is reflected in a recent statement by a middle-level Gosplan official [redacted]. He acknowledged that the 1980s would bring a decline in growth from the rates achieved in the 1960s and early 1970s but confidently predicted better times for the 1990s.*

[redacted] defense spending would not change the growth of GNP by much. For example, a change of 4 percentage points would alter the growth of GNP in either period by only a little over 0.1 percentage point. This is because changes in defense spending cannot make up for the deficiencies in labor and energy that the Soviets will face. [redacted]

These calculations, however, probably understate the effects of changes in defense allocations on economic growth. First, the calculations do not reflect any productivity gains in the civilian sector that might result from a slowdown in defense programs. (These could flow from an improved ability to allocate scarce material resources or to provide more consumer goods to stimulate the work force.) Second, the model does not

take into account: the impact that reduced defense demands would have on specific sectors like machine building and transportation; the improvements that could accompany the release of high-quality labor, machines, and materials for civilian uses; or the cumulative effects that the removal of bottlenecks in different parts of the economy could have on overall economic performance. [redacted]

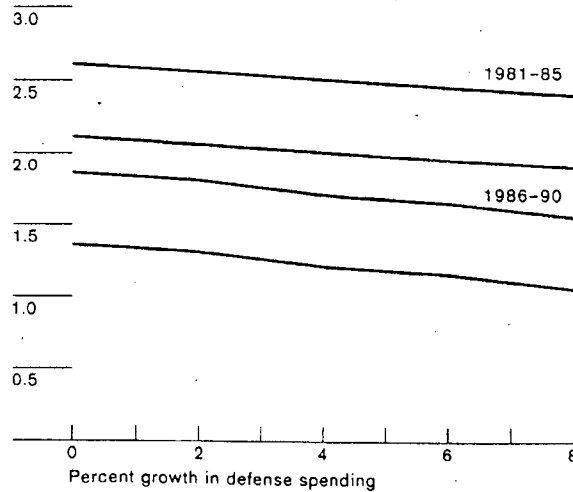
Nonetheless, there seems to be no alteration in defense expenditures short of a major budget cut that could maintain the current levels of growth in Soviet GNP, investment, or per capita consumption through the 1980s. Conversely, a substantial increase in the growth of defense spending (for example, doubling the rate

# Economic Impact of Soviet Defense Spending in the 1980s

## Rate of Growth of GNP

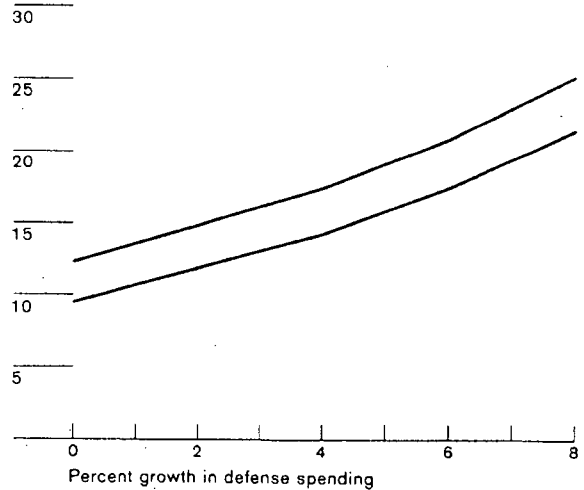
(first and second half of the decade)

Percent growth of GNP



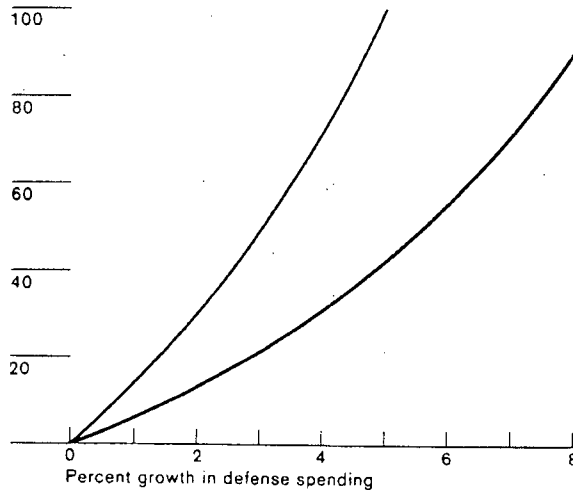
## Defense Share of GNP in 1990

Percent share of GNP



## Defense Share of Increment to GNP in 1990

Percent of increment to GNP



Range of uncertainty

from 4 to 8 percent) would reduce the rate of growth in GNP but probably would not, in itself, reduce it to zero or less. ☐

A change in the rate of growth of defense spending would, however, alter the distribution of economic resources, even if the overall rate of economic growth remained largely unchanged. As the second panel shows, the defense share of GNP—which determines the share that will be left over for investment and consumption—could range from one-tenth to one-fourth, depending on the rate of growth of military spending. Thus, given the slow rate of growth that we project for the Soviet GNP in the 1980s, almost any acceleration in the growth of defense spending would have considerable impact on the share of economic output available for civilian uses. ☐

The most important effect of changes in the rate of growth of defense spending is that they determine the size of the annual increase in economic resources that civilians can have. This is shown in the third panel. A major increase in military spending could sharply reduce the availability of additional capital for investment (and during the 1980s this capital will be needed to develop the infrastructure required to exploit natural resources in distant areas). Moreover, a major defense increase could bring per capita consumption to stagnation or to a measurable decline. Such a decline would influence popular morale and labor productivity, with serious political and economic consequences. It is conceivable, therefore, that the Soviet leaders could see some reduction in the growth of defense spending as an attractive element of a policy program, even though its specific contribution to economic growth would be small. ☐

The impact of defense programs is particularly severe in several key sectors of industry (R&D, machine building, and metallurgy, for example), and Soviet leaders probably would focus on these areas if political factors led them to make changes in defense allocations. They know their long-term defense effort requires that these sectors continue to grow, and they are aware that current defense programs take a disproportionately high share of the sectors' output. ☐

Some Soviet defense production competes directly with civilian products that will be critically needed in the 1980s. These include:

- Transportation equipment, especially locomotives and rolling stock for the overburdened Soviet rail system.
- Mining and drilling equipment to exploit raw material deposits.
- Modern machine tools to replace obsolescent capital equipment in industry.
- Materials-handling equipment to free labor for more productive tasks.
- Agricultural machinery to improve productivity in the farm sector—one of the most backward components of the economy. ☐

Many plants produce defense goods side-by-side with these critical civilian products—filling the defense orders first—and thus military programs preempt capital equipment and trained labor from civilian production. Tanks and railroad cars are produced in the same plants, for example. Increases in production of tanks in the 1970s were accompanied by declines in the output of railcars. Production of armored personnel carriers competes with production of tractors. Naval shipyards produce parts for transportation and agricultural machinery, and at least one submarine building yard also produces oil pipelines. ☐

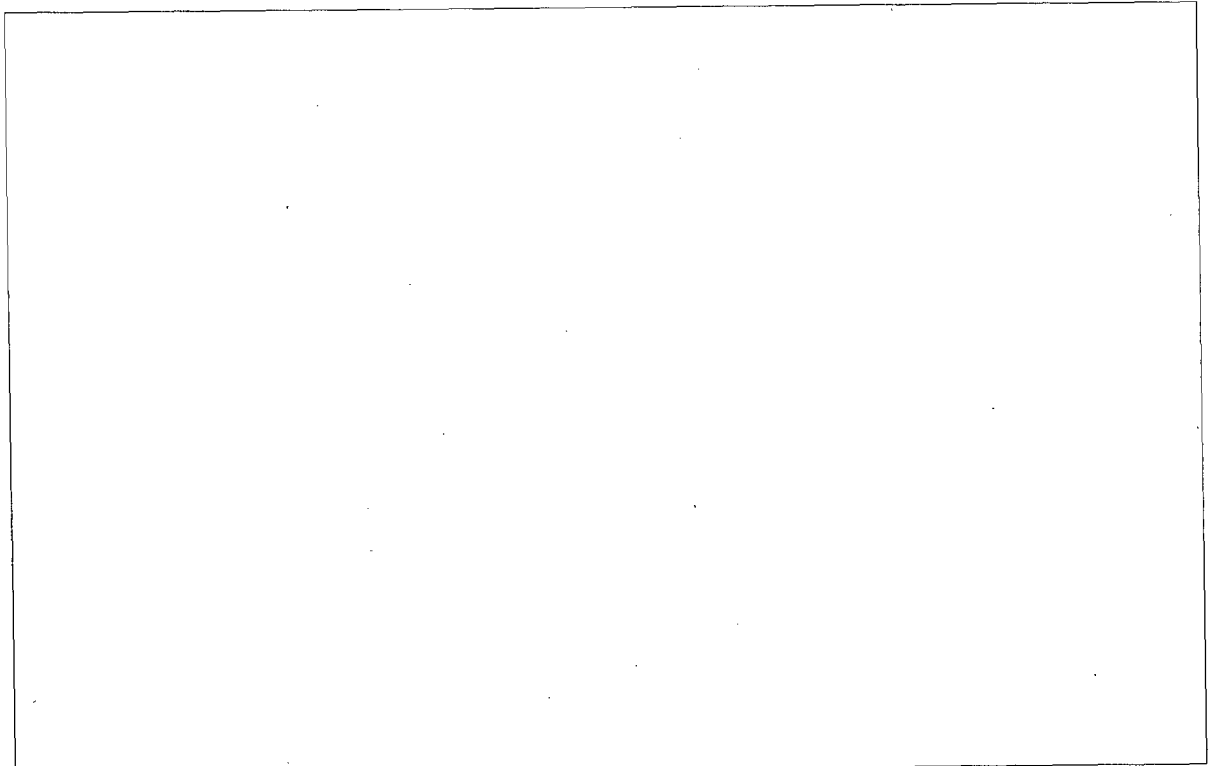
Other military plants, such as most of those for missiles and aircraft, also produce consumer goods. These are generally less important to the economy, however, than the durables manufactured at shipyards and plants for ground forces weapons. These relationships are summarized in the table on page 67. ☐

In addition to capital and labor, some military programs also preempt materials that could be used for important civilian products. Military ships and ground force armaments use combinations of materials similar to those needed by industries producing pumps, machine tools, mining equipment, and construction and transportation machinery. (The patterns of material inputs supplied to the aircraft and missile industries, on the other hand, are more specialized and do not closely parallel those of any civilian industry.) ☐



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### Tank Plant at Nizhniy Tagil



*This tank plant is also a major producer of rail cars. Some of the basic manufacturing and subassembly facilities here are used for both military and civilian production.*



These patterns of materials use suggest that resources which the centrally planned Soviet economy currently devotes to shipbuilding and production of ground forces armaments could be diverted fairly directly to those critical civilian sectors. Moreover, the shipbuilding and ground force weapon industries probably are heavier users of energy and metal than are the aircraft and missile industries. ☐

***Political Implications of Constraints.*** The economic slowdown highlights a major political dilemma facing the current leaders, who must also cope with their uncertain international position and the impending

political succession. To protect their international political gains and advance toward further goals, they will be strongly motivated to maintain (or even accelerate) the momentum of the nation's military effort. The military planners' views of deficiencies in Soviet forces and of the dynamism of Western defense programs will reinforce that motivation. ☐

But to achieve even modest rates of economic growth the Soviets must rely on increased productivity, which they can only achieve by directing more resources to investment and consumption. This tension between internal and external goals has the potential to fracture

## Relationships Among Soviet Defense and Civilian Industries

Defense Industry	Principal Civilian Lines at Final Assembly Plants	Other Closely Related Civilian Production Technologies
Ballistic missiles	Metal consumer goods, machine tools <sup>a</sup>	None
Aerodynamic missiles	Metal consumer goods, excavating equipment <sup>b</sup>	None
Fixed-wing combat aircraft	Metal consumer goods, parts for agricultural machinery	None
Fixed-wing support aircraft	Civilian transport aircraft, metal consumer goods, hand tools	None
Helicopters	Civilian rotary-wing aircraft, metal consumer goods	None
Naval surface ships	Merchant and fishing ships, chemical storage tanks, parts for transportation and agricultural machinery	Pumps, machine tools, mining equipment
Submarines	Merchant ships, oil pipelines, parts for transportation and agricultural machinery	Pumps, machine tools, mining equipment
Tanks	Railroad rolling stock and locomotives	Construction and transportation equipment
Other armored vehicles	Agricultural machinery	Construction and transportation equipment
Artillery	Agricultural machinery, motors, and machine tools	Construction and transportation equipment

<sup>a</sup> One ballistic missile plant produces civilian machine tools.

<sup>b</sup> One surface-to-air missile plant produces excavating equipment.

the leaders' consensus on national priorities, and the disarray that could accompany a simultaneous economic crisis and political succession might provide the catalyst for major change in policies.

We do not have specific indications that changes are in the offing. But as economic problems become more severe, they could reach a point where muddling through will no longer suffice, and the possibility of changes in fundamental policy will increase. Thus the

Soviet Union of the 1980s will be a more volatile society, and its policies (and reactions to US policies) will be less predictable than in the past.

## Technological Factors

Looking at the 1980s, the Soviets can see both strengths and weaknesses in their military technology. They recognize that the level of a nation's technology is not the sole determinant of its military power, but they consider it one of the most important. The Soviets consider the state of military technology a major factor in the ability to mobilize the economy in wartime and believe that foreign perceptions of Soviet military technology (as advanced or lagging) can have a political impact.

The Soviets assign a high priority to military R&D. In 1980, military R&D probably accounted for:

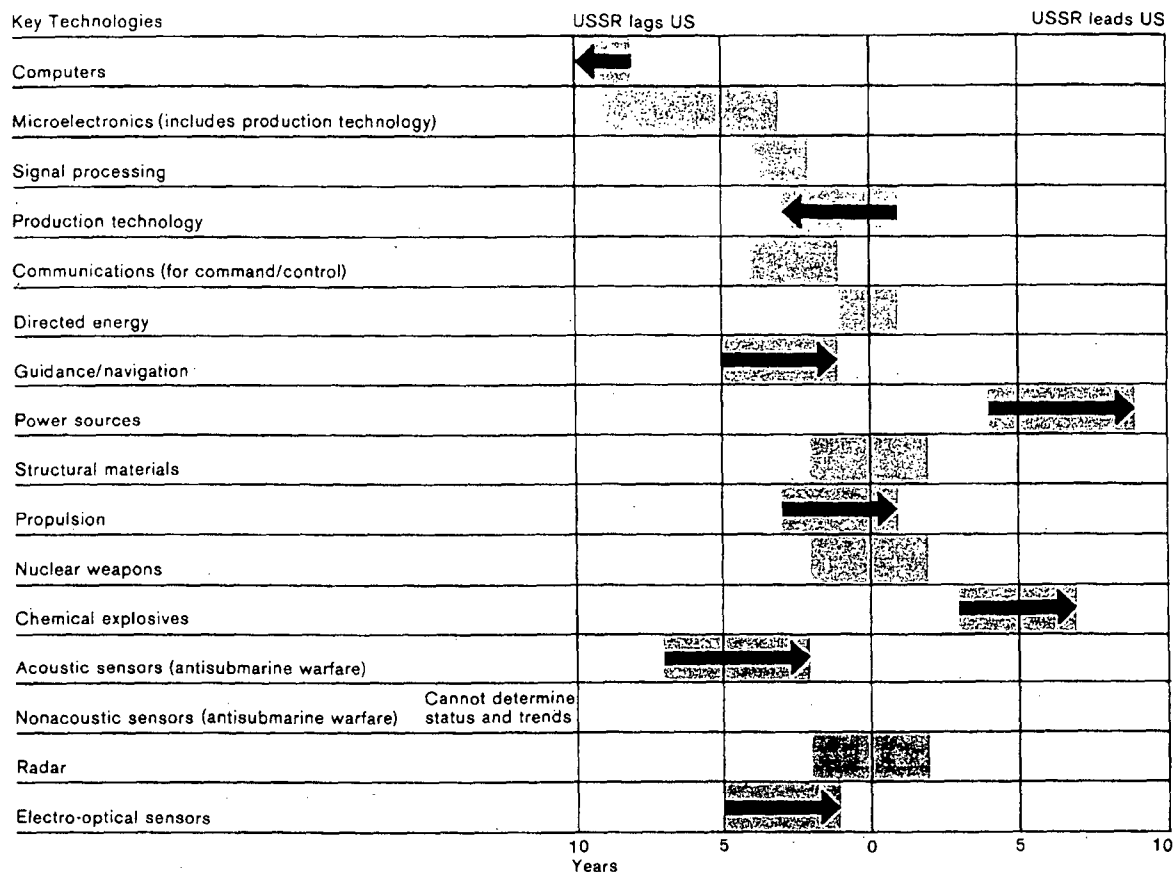
- Almost one-fourth of Soviet defense expenditures.
- Almost 3 percent of GNP.
- One-half of Soviet expenditures for all R&D.

In such key technologies as microelectronics and computers, acquisition of foreign technology (by legal, illegal, and clandestine means) has been a significant help to the Soviet military effort.

The Soviets have made good progress in developing many technologies that are important to military capabilities, but their progress has been uneven. (See chart on page 68 comparing the US and USSR in this regard.) They lag behind the US in those technologies that depend on the interaction of several technical disciplines. They are behind in three technologies that have an especially broad impact on modern military systems—computers, microelectronics, and signal processing. They are roughly equal to or ahead of the West in technologies where large size can make up for a lack of complexity. These include power sources and conventional explosives.

In the late 1980s the Soviets probably will reduce the lead of the West in guidance and navigation, propulsion, and acoustic and electro-optical sensors. In areas where they are ahead, such as power sources and chemical explosives, they probably will widen their lead. We expect the Soviets to stay about even with the West in radar, directed energy, structural materials, and nuclear weapons; to continue to lag by a few years

# Relative US-Soviet Current Status and Trends in Key Military Technologies



USSR gaining ground



Equal rates of advance



USSR losing ground



in signal processing and communications; and to fall further behind in computers. Their progress in microelectronics will depend largely on continued acquisition of foreign manufacturing equipment and technology. ☐

The Soviets' improving technology probably will enable them to begin developing and testing a number of advanced weapons in the 1980s. The development of most weapons probably will be evolutionary, with improvements appearing gradually in succeeding weapon generations—but a few will be adventurous, incorporating new technological principles. We expect the Soviets to increase their emphasis on the advanced technologies—computers and microelectronics, for example—that are critical to solving such complex military problems as command and control, ASW, and air and missile defense. They probably will also increase their basic research efforts to advance the overall state of military technology and to develop a broader range of technical options. ☐

Although a few adventurous weapons may enter the Soviet forces in small numbers in the late 1980s, for the most part weapons based on new technologies will not be available until the 1990s. This is because of the long leadtimes of advanced weapon development programs and the built-in conservatism in the Soviet system of R&D management. ☐

Modern weapon systems on the average take a decade or more to move from the initiation of design to the first operational deployment. Moreover, in the USSR, this time appears to be increasing, as shown in the chart on page 70. This means that the great majority of new weapons that could enter Soviet forces by 1990 began development in the late 1970s or earlier.<sup>12</sup> ☐

Most weapons deployed in the late 1980s will embody the technology that was available to Soviet development organizations in the late 1970s. This follows from the Soviet practice of selecting a design and freezing the basic technology early in the development process. ☐

<sup>12</sup> The development time for a modified version of an existing system is considerably shorter than the time for a new system; consequently, development of modifications begun in the early-to-mid-1980s could result in production before 1990. ☐

### Weapon Programs in Train

Soviet weapons in the field through the 1980s will consist primarily of systems already in the forces and those now entering production and in late stages of development. The forces will also have a few systems that now are early in the development cycle. Except for these, most of the systems have already been identified by intelligence, and many of their characteristics are known. Even for the systems not yet positively identified, we can make judgments about general characteristics on the basis of our knowledge of the current Soviet capability in key military technologies. ☐

We estimate that the Soviets currently have in production some 190 major weapon and support systems—military aircraft; principal land arms; missiles and military space systems; naval surface combatant, mine warfare, and amphibious ships; and submarines. Many of them will continue in production through the late 1980s. Soviet weapon production runs tend to be long by Western standards. The average production period for a military aircraft, for example, is about 10 years and for a tank or armored vehicle about 12 years. If the Soviets continue their present practices, some 50 to 60 of the 190 current systems being produced would still be in production in the late 1980s. ☐

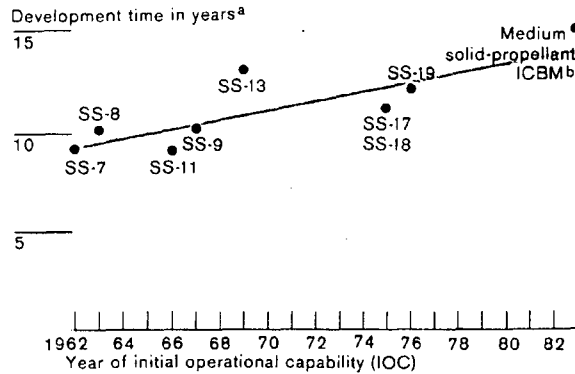
Our estimates of the number and types of systems still in development are less precise, but we have a good capability to identify most major Soviet weapon development programs before they reach operational status. Our capability varies from category to category:

- We can usually identify programs for aircraft, missiles, and spacecraft at least by the flight test phase—well before deployment.
- Because major naval ships are highly visible and take a long time to build, we usually discover them several years before they become operational.
- Our record is poorest for ground force weapons, which we sometimes have not identified until they were operationally deployed.

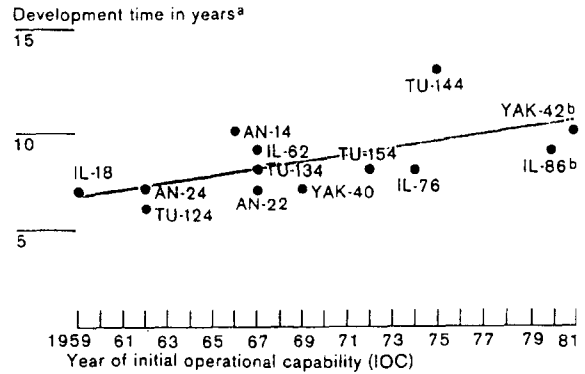
Within each category, we can usually identify new designs more easily than modified versions of existing systems. ☐

## Development Times for Major Soviet Weapon Systems

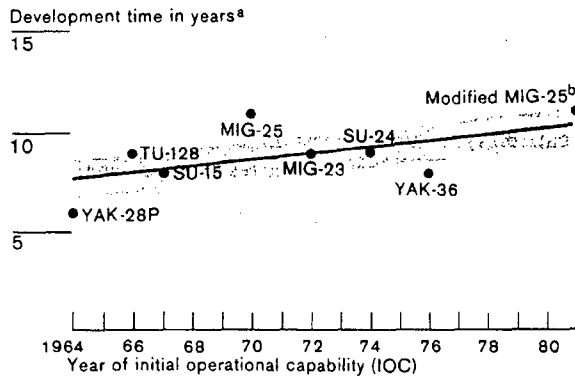
### ICBMs



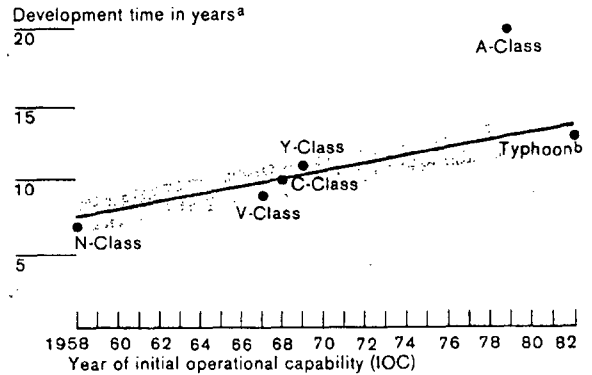
### Transport Aircraft



### Fighter Aircraft



### Nuclear Submarines



□ One-year range around trend line.

<sup>a</sup> Years from start of design work to initial operational capability.

<sup>b</sup> Estimated.

### *Soviet Management of New Technology: The A-Class Submarine*

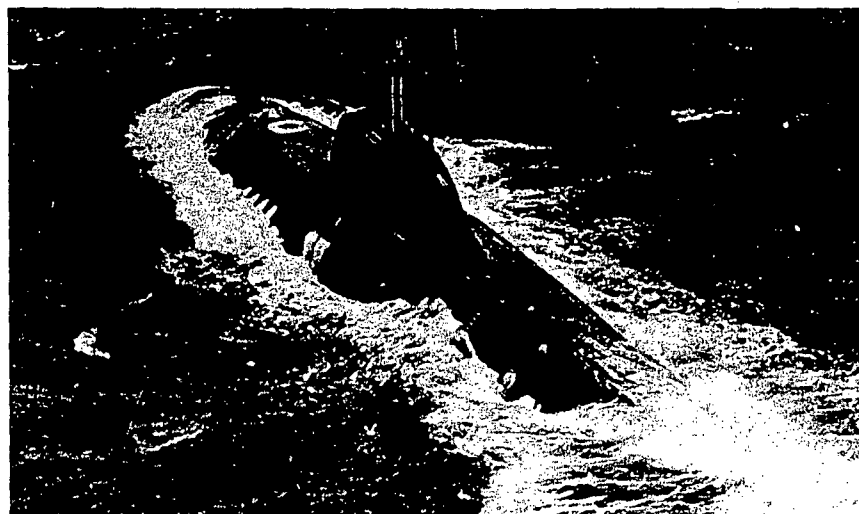
The military development and production establishment favors the evolutionary approach to weapon design, but in some instances, the Soviets have been able to overcome the bureaucratic inertia and to develop weapons based on advanced technology. This has usually required high-level intervention and has typically taken much longer than the normal weapon development cycle. A case in point is the development of the A-class—a high-speed, deep-diving ASW submarine with a titanium hull.

In the mid-1950s, when Khrushchev restructured the Soviet military forces, he appointed Admiral Sergei Gorshkov as Commander in Chief of the Soviet Navy with instructions to expand the role of submarines. In the late 1950s, the Navy tasked the defense industries to develop a submarine that could be employed against enemy SSBNs, could dive to 1,000 meters, and could cruise at 40 knots. At that time, the Soviet submarine force consisted almost entirely of diesel-powered units with depth capabilities of a few hundred feet and speeds of less than 15 knots; the first nuclear-powered submarines (with speeds of up to 28 knots) were just being introduced.

Most of the proposed designs for the new submarine were rejected because they were too large, but two reportedly were accepted—for the A-class torpedo attack submarine and the P-class cruise missile submarine. Both were high-risk programs incorporating new technology. Only one P-class unit was built, and the program evidently was canceled in 1968. The first A-class unit was completed in 1969 and began sea trials in 1971. It encountered serious problems and was cut into sections and never reassembled. Six other units have been launched; four of these are operational or on sea trials.

The A-class first became fully operational (by US standards) in 1979—some 20 years after the development program was started. In contrast, the less technologically risky submarine programs that began at about the same time—those for the C, V, and Y classes—took eight to 10 years. The A-class program is typical of Soviet experiences with advanced technology. It required high-level interest and a long time, but it did permit the Soviets a major improvement in performance that can be incorporated, with less risk, into future submarines.

*A-class submarine*



We have firm evidence on over 110 Soviet military weapon and space development programs—some 85 percent of the systems that we expect the Soviets to introduce in the next decade.<sup>13</sup> About 50 are in the testing phase, and past Soviet behavior suggests that almost all of these will be deployed. (Since the early 1960s, more than 90 percent of the systems that have reached testing have been produced.) The Soviets usually make the decision to produce a weapon before or during the test period. [ ]

We believe that the Soviets have made commitments to produce at least 25 new systems in the next few years. We base this judgment on the identification of capital construction activity at a number of weapon production facilities. Such construction is authorized when a production decision is made. Production decisions probably have also been made (or will be made shortly) on most of the other systems being tested. [ ]

The other 60 or so systems on which we have firm evidence are in stages of development before testing. We expect most of these to be deployed as well. This evidence on development programs under way, as well as data on R&D capacity and military requirements for the 1980s, suggests that the Soviets could introduce some 120 to 130 new or modified major weapon and space systems during the 1980s. The chart shows the steadiness of the effort over two decades. [ ]

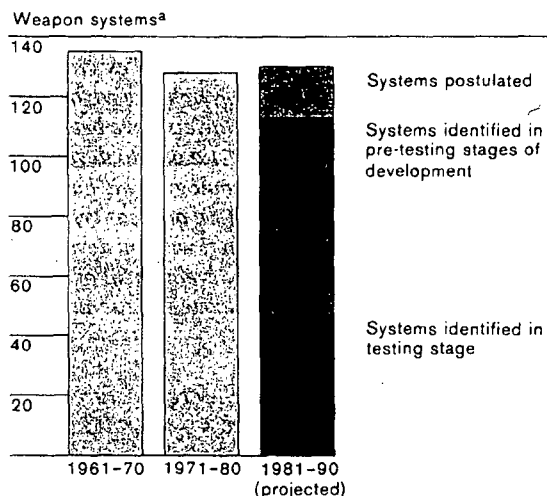
Taking into account weapons now in the inventory that we expect the services to retain through this decade, those in production whose manufacture is likely to continue, and those now in testing or development, we believe that we have identified well over 90 percent of the weapon systems that will be in Soviet forces in 1990. Our identification of these systems, together with an understanding of the other factors affecting Soviet military policy, forms the foundation of our projections of the course of Soviet military power in the 1980s. [ ]

### Problems in Projecting

The evidence and analysis outlined above suggest a number of themes that are likely to characterize Soviet

<sup>13</sup> We also have evidence on about 10 civilian space systems being developed in the Soviet defense industries. (s)

### Number of New or Modified Soviet Weapon Systems Deployed



<sup>a</sup>Includes military aircraft, missiles, naval ships (surface combatants, mine warfare, and amphibious), submarines, military space systems, and principal land arms (tanks, armored vehicles, artillery, and anti-air weapons).

military forces and policies over the next 10 years. Translating these themes into concrete projections is more difficult now than in earlier years because the economic and political conditions that will affect the evolution of Soviet power through 1990 are unusually complex. To accommodate this uncertainty we discuss several possible courses that the USSR could follow. [ ]

The first projection, which we characterize as a baseline, is the one most consistent with our current evidence on factors that will influence Soviet military programs and policies for the 1980s. Although we are uncertain in some cases about the precise number and characteristics of weapons to be produced (and therefore about how much they will cost), we believe that we have identified most of the weapons (systems under development, currently in the forces, and being produced) that will shape the evolution of Soviet military power over the next decade. This knowledge, plus our

understanding of Soviet decisionmaking and of the military, political, and economic environment in which it takes place, leads us to believe that Soviet forces and doctrine will develop much as outlined below. ☐

They may not. We cannot rule out the possibility that Soviet military programs in the 1980s will differ from our baseline projection because our evidence, though fairly definitive on future weapon systems, is less conclusive in such areas as the political succession and is too general to pinpoint the foreign policy environment and economic performance in any given year. But it is precisely these less predictable factors that could make the greatest difference in Soviet policies. ☐

To take these uncertainties into account, we present three alternative projections of the Soviet military posture (pages 96-101). Each assumes that a sharp discontinuity in the environment for Soviet military policy will occur in the early 1980s. All assume the same weapon systems as the baseline, because of the long leadtimes discussed on page 69. The projections differ, however, in the size of the forces, the numbers in which the new systems are deployed, their rates of production, and the relative emphasis given to different military missions. ☐

#### A Baseline Projection

##### Assumptions

In forming our baseline projection we must rely on a number of assumptions that can be deduced from past Soviet behavior and currently available evidence.

These assumptions are:

- That Soviet leaders will continue to emphasize military power as a principal asset in international relations.
- That they continue to base their judgments about military requirements on a doctrine that emphasizes forces structured to fight and win future military conflicts.
- That there will be no major changes in the institutional arrangements for Soviet decisionmaking on defense.
- That the influence of the defense and defense-industrial establishments in decisionmaking will not diminish significantly.

- That there will be no fundamental changes in the international environment, such as the dissolution of Soviet hegemony in Eastern Europe or a Sino-Soviet rapprochement.
- That the successors to Brezhnev will share the general attitudes of the current leaders on the need to maintain massive military power.
- That Soviet economic growth will continue to decline, but without sharp discontinuities such as those that could result from a series of disastrous harvests.
- That the internal political environment will not be so volatile as to destroy the current consensus on national priorities.
- That the Soviets have correctly projected most of the major Western and Chinese military programs for the 1980s.
- That no Soviet technological breakthrough will significantly reduce the development time for new weapons.
- That the Soviets will show the same degree of commitment as in the past to their military R&D programs.

We treat arms control constraints as a variable in describing the range of force alternatives under our baseline projection. ☐

#### Projected Military Forces and Systems

The evidence currently available indicates that, under these assumptions, the Soviet policy of balanced force development would continue in the 1980s, with marginal shifts to redress critical weaknesses and to meet new threats. In particular, we expect emphasis on survivable strategic attack forces, on strategic defense, and—to a lesser extent—on forces for the projection of power to distant areas. Demographic problems probably will limit increases in force size, but we expect modernization to proceed at a rapid pace, as new weapon systems enter the forces. ☐

We anticipate that total Soviet military manpower will increase little in the 1980s, remaining slightly over 5 million men. There probably will be some increase in ground combat units—principally along the Sino-Soviet border but possibly also in Afghanistan and the western and southern USSR. We expect the number of units opposite NATO to remain fairly stable, barring an agreement on force reductions in Europe. We anticipate little change in manpower for other forces,



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### *Soviet Military Manpower Issues in the Eighties*

*Soviet military planners will face several manpower-related issues in the 1980s:*

- *Demographic trends, marked by a decline in the size of the draft pool and shifts in its ethnic composition, will make it more difficult for the military manpower procurement system to meet the needs of the armed forces.*
- *Continued introduction of advanced weapon systems will place a greater burden on Soviet military training programs—particularly those for the short-term conscripts.*
- *Sagging civilian labor force growth may create pressures on the military to reduce manning levels.*

*We believe, however, that the Soviets can deal with these problems.*

*A decline in the size of the draft pool from 10 million in 1979 to 7 million in 1989 will require the armed forces to modify their manpower procurement system if they wish to maintain current manning levels. Military planners have several options for adjusting to this decline, including increases in the term of conscripted service, recall of more reservists to active duty, retention of more career enlisted personnel, and greater use of women and civilians. Although the Soviets are likely to implement some combination of these options, they can most easily meet their manpower needs by extending the term of conscripted service from an average of two years to two and a half.*

*Increasing numbers of Central Asian minorities will have to be brought into the mainstream of military life as their share of the draft pool rises from 20 percent in 1979 to 30 percent in 1989. To facilitate this process, the Soviets have instituted more rigorous public education programs, which stress Russian language training for minorities. While the success of these programs may be limited by continuing racial distrust and cultural differences, we believe the gains will allow minorities to continue to function satisfactorily in the armed forces.*

*The Soviet military system is well suited to deal with problem of maintaining the combat capabilities of a largely conscript force as more advanced weapon systems are introduced. Several aspects of it protect the conscript from the brunt of technological advances in weaponry:*

- *A conservative design philosophy which stresses standardization and reliability of weapons, with few changes from one generation to the next.*
- *Reliance on technically trained junior officers for complex operations and maintenance tasks.*
- *Emphasis on narrow specialization in conscripts' military duties.*
- *Enforcement of rigid, calendar-oriented maintenance norms at the unit level.*

*We expect that these factors will continue to allow the Soviets to use relatively unskilled people to operate and maintain the more advanced weapon systems they are deploying.*

although the size and manning requirements of strategic forces would be affected by limits on strategic arms. ☐

The judgment that modernization will move rapidly is based on the number and types of weapon programs we foresee. Some 85 percent of these have been identified from direct evidence of production or development activities. We have postulated the other new systems because we have evidence on the availability of development and production resources and the requirements of Soviet forces. Most of these postulated cases relate to weapons projected for deployment late in the decade. ☐

**Strategic Attack Forces.** In the 1980s the Soviets will continue to strive:

- For counterforce capabilities to attack the silos and bases of US strategic forces.
- For flexible capabilities against other military and industrial targets.
- For a high degree of reliability and survivability for their own strategic forces.

Precisely how they will structure their forces will depend on arms control agreements as well as on US, NATO, and Chinese programs. ☐

In general, we expect that the Soviets will continue the modernization programs now under way for their strategic forces and will maintain a variety of options for responding to the actions of potential enemies. As a result, they will retain the capability to carry out an effective retaliatory attack. Some of their technical options—including those for mobile ICBMs and long-range cruise missiles—would complicate our monitoring of arms control agreements. ☐

Evidence of programs currently under way supports our estimate that the Soviets could field a number of new or modified strategic delivery systems by the end of the decade. (The exact number will depend on the limitations imposed by any arms control agreements.) For their missile programs, they could choose among a number of payload combinations, including a possible maneuvering reentry vehicle for improved accuracy. Construction activity under way at major missile plants suggests that the Soviets will increase the capability of their SSBN force and develop solid-propel-

## Projected Strategic Attack Systems <sup>a</sup>

System	Comment
<b>Early 1980s</b>	
Medium-size solid-propellant ICBM <sup>b</sup>	Improved throw weight, survivability, and accuracy.
Improved SS-17 ICBM <sup>c</sup>	Upgraded SS-17 with better accuracy.
Small solid-propellant ICBM <sup>d</sup>	Derivative of the SS-16 (a missile that was tested but never deployed). Probably would be deployed on mobile launchers.
<b>Mid-1980s</b>	
Improved SS-19 ICBM	Upgraded version of SS-19 with better accuracy.
Improved SS-18 ICBM	Upgraded version of SS-18 with improved accuracy.
Improved SS-N-8 SLBM	Improved accuracy and payload; deployed on D-I- and D-II-class SSBNs.
SS-NX-20 SLBM	Long-range SLBM with multiple independently targetable reentry vehicles and better accuracy; deployed on new submarine with 20 launchers.
<b>Late 1980s</b>	
Improved SS-N-18 SLBM	Improved accuracy; deployed on D-III-class SSBNs.
Improved SS-NX-20 SLBM	Multiple-RV and single-RV versions with improved accuracy.
New long-range bomber	Probably will have versions with both gravity bombs and air-launched cruise missiles.
Wide-body cruise missile aircraft	Heavy transport aircraft to carry air-launched cruise missiles.

<sup>a</sup> Based on past Soviet practice, and on the availability of design resources, we expect the Soviets to improve, modify, or possibly replace some of these systems during the 1980s.

<sup>b</sup> Could be deployed with a single reentry vehicle to replace SS-11s or with MIRVs to replace SS-17s and possibly SS-19s.

<sup>c</sup> Probably would be deployed only if medium-size solid-propellant ICBM is fielded without MIRVs.

<sup>d</sup> Under SALT II, the Soviets would have to choose between this missile and the medium-size solid-propellant ICBM.



lant missiles that could be deployed on mobile launchers. (Mobile ICBMs are difficult to count with high confidence, and their deployment would complicate the monitoring of limitations on the number of strategic delivery vehicles.) [ ]

We also expect the Soviets to introduce in the late 1980s their first intercontinental attack bomber since the 1950s. We have evidence that two or three such aircraft are under development; they probably will carry both bombs and air-launched cruise missiles. Even so, bombers will still be a relatively small part of the strategic attack force. We also believe that the Soviets are working on a long-range submarine-launched cruise missile that might have a strategic role. [ ]

The size of the Soviet intercontinental attack force will depend on the presence or absence of arms control constraints:

- The record of their attitudes toward arms control indicates that they will pursue strategic programs to the limits of any treaty restrictions.
- Without SALT constraints, the Soviets probably would feel greater uncertainty as to US actions and seek greater safety from surprises by retaining older systems, deploying more warheads on their ICBMs, and fielding land-mobile strategic systems. (s)

Given the wide range of Soviet options, and uncertainty about treaty constraints, we can at best bound the size of Soviet strategic forces under varying assumptions. If we assume levels of effort consistent with past trends, our analysis suggests that by 1990:

- Soviet strategic forces would have some 2,250 delivery vehicles if constrained by SALT II limits and up to 3,150 if unconstrained. (Larger increases are possible, but unlikely for technical and economic reasons.)
- The number of individual weapons and warheads in the force would continue to increase in any event; under SALT II it could double from its present level of nearly 6,000, and without any limitations it could nearly quadruple.

- The number of weapons deployed on highly survivable delivery vehicles—mobile ICBMs and SLBMs—could increase even more rapidly than the total number. Reentry vehicles on SLBMs and mobile ICBMs could increase from about one-fifth of total missile weapons (at present) to more than one-third. Moreover, Soviet ballistic missile submarines introduced in the 1980s may be quieter than the current ones, thus eroding the capabilities of Western acoustic ASW surveillance systems and increasing the survivability of the SLBMs.

- The average accuracy of the Soviet's MIRVed ICBM force could improve [ ]

- As a result of this improvement in accuracy, the number of weapons suitable for use against hard targets could increase from its present level of nearly 4,000 to some 6,000 to 8,000 under SALT (depending on what payload options are chosen) and to as many as 14,000 without limitations. [ ]

With these forces, the Soviets would improve their war-fighting capabilities. They would maintain or increase their already substantial lead over the United States in equivalent megatonnage. The deployment of increasingly accurate ICBM weapons would increase the threat to US ICBM launchers in the early 1980s; and the Soviet ICBM force, with or without SALT, would have the theoretical potential to destroy the bulk of US land-based ICBM reentry vehicles throughout the decade. (Soviet SLBMs probably will not have hard target capabilities in the 1980s.) [ ]

Despite these improvements, US air- and sea-launched strategic weapons, together with such ICBM weapons as survived a Soviet attack, could destroy a large percentage of Soviet military and economic targets and population even during the early 1980s—the period when US ICBMs will be most vulnerable. This retaliatory force will probably inhibit the Soviets from deliberately provoking a nuclear confrontation. [ ]

## Projected Soviet Strategic Attack Forces

### Intercontinental Nuclear Delivery Vehicles

Launchers and aircraft

3,500

3,000

2,500

2,000

1,500

1,000

500

0

0

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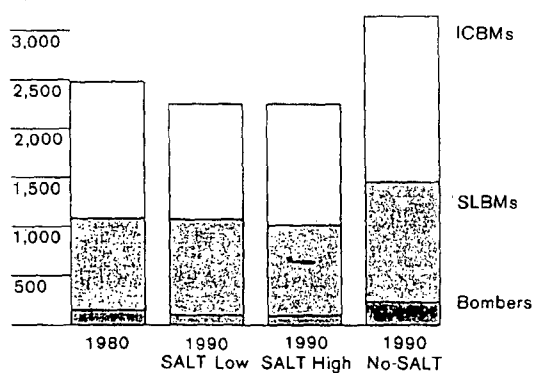
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### Number of Individual Weapons for Intercontinental Attack<sup>a</sup>

Weapons

22,500

20,000

17,500

15,000

12,500

10,000

7,500

5,000

2,500

0

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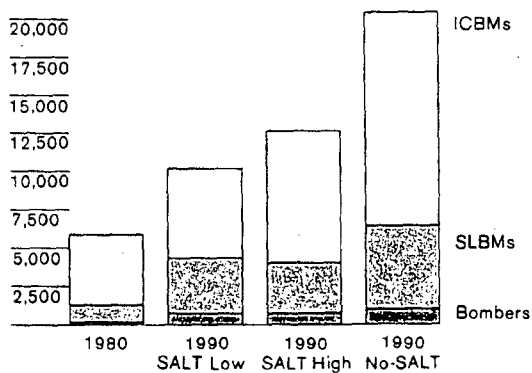
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### On-Line Equivalent Megatonnage for Intercontinental Attack<sup>a,b</sup>

Equivalent megatons

11,250

10,000

8,750

7,500

6,250

5,000

3,750

2,500

1,250

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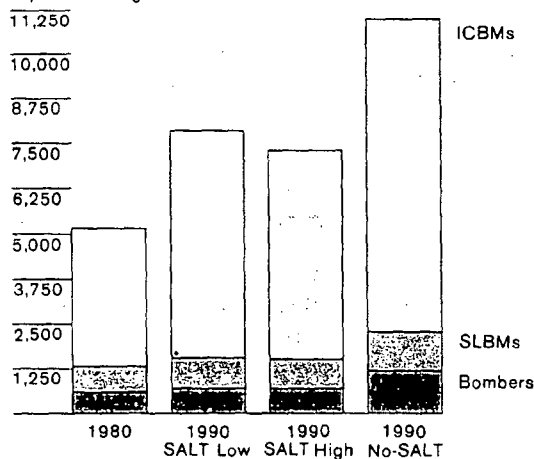
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### On-Line Hard Target Weapons for Intercontinental Attack<sup>a,c</sup>

Weapons

14,000

12,000

10,000

8,000

6,000

4,000

2,000

0

0

0

0

0

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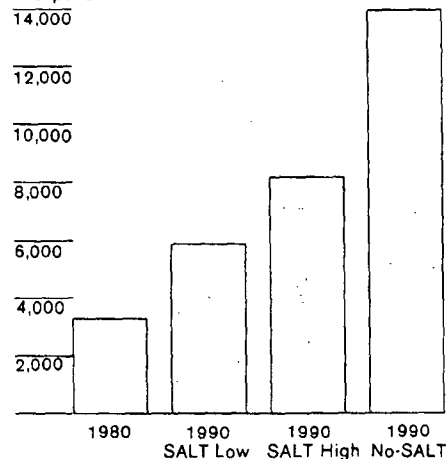
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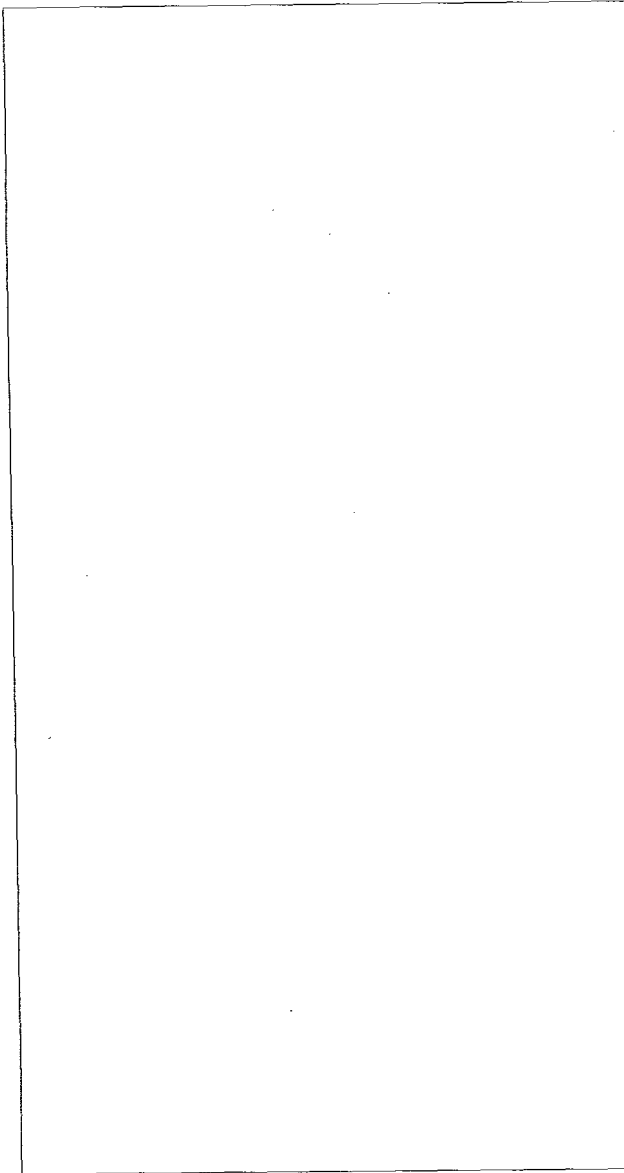


<sup>a</sup> Excludes equipment off line for conversion or modernization.

<sup>b</sup> Equivalent megatonnage provides a rough assessment of the theoretical capabilities that yield and number of weapons provide against soft area targets. Expressed in equivalent megatons, the area of lethal effect of a weapon is equal to weapon yield raised to the two-thirds power if less than one megaton or to the square root of the yield if greater than one megaton.

<sup>c</sup> Soviet hard target weapons are defined as those that have a damage expectancy of at least 50 percent resulting from two-on-one targeting of silos or one-on-one targeting of M-X shelters.

## The Typhoon Ballistic Missile Submarine



The first submarine of this class was launched in 1980. It is larger than the US Ohio-class (Trident) submarine, carries 20 launchers for a new ballistic missile that is now being tested, and probably will be quieter than current Soviet ballistic missile submarines.



If the US M-X system is deployed, Soviet ICBMs will be increasingly vulnerable to attack in the mid-to-late 1980s. Even during this period of peak vulnerability, however, the Soviets could expect many ICBM or SLBM weapons to survive a US attack—enough to destroy 60 to 70 percent of US economic or military targets in a retaliatory strike. [redacted]

**Strategic Defense Forces.** We expect the Soviets to pay more attention to strategic defense in the coming decade, with substantial modernization of forces for defense against aircraft, missiles, satellites, and submarines. The improvement in air defenses will increase the risk to bombers attempting to penetrate Soviet airspace at all altitudes, but will be less effective against cruise missiles. The ABM network around Moscow probably will be upgraded to improve defense against a light or accidental attack. (ABM capabilities against a large-scale attack, however, will remain poor.) Work on antisatellite systems will continue, and by the end of the decade the Soviets could be able to destroy satellites in high orbits. We foresee no significant improvements in ASW capabilities. [redacted]

Continuing efforts in civil defense shelter construction will improve protection for the leaders and essential work force, but the general population will remain dependent on evacuation. Despite their growing offensive and defensive capabilities, during the 1980s the Soviets could not prevent a US retaliatory nuclear attack from causing tens of millions of casualties and the massive destruction of urban-industrial and military facilities in the USSR. [redacted]

We expect the number of SAM launchers to decline over the next 10 years as the Soviets phase out their older systems. But the overall effectiveness of the SAM force—especially against low-altitude targets (primarily at 100 to 300 meters)—will increase with deployment of the SA-10. This system has a better capability than earlier SAMs to track and engage several targets at once and will be somewhat more effective against low-flying aircraft. We project the introduction in the mid-1980s of a modified version of the SA-10, with better capabilities against low-flying aircraft and with some capability to engage cruise missiles. By 1990, we expect about one-third of Soviet strategic SAM launchers to be for the SA-10 or its modified version (see chart on page 80). [redacted]

### Projected Systems for Strategic Air and Missile Defense <sup>a</sup>

System	Comment
<i>Early 1980s</i>	
SA-10 SAM	Improved target-handling capability and better ability to engage aircraft approaching at low altitudes.
Modified Foxbat interceptor	Capability to detect, track, and attack targets at low altitudes.
New airborne warning and control aircraft	Improved detection of air attack (including low-altitude targets) and control of interceptors.
New ballistic missile early warning radar	Will expand the coverage and improve the tracking ability of the Soviets' early warning network.
<i>Mid-1980s</i>	
Modified SA-10 SAM	Improved capability against low altitude aircraft; increased capability against cruise missiles.
Two new interceptors	Better capability than current interceptors to engage targets at lower altitudes.
Improved ABM system	Upgrading and expansion of the Moscow ABM system to 100 launchers and an additional ABM radar; deployment of two new missiles, including a high-acceleration missile that can engage targets after they have reentered the earth's atmosphere.
<i>Late 1980s</i>	
New ballistic missile early warning radar	Improved target discrimination and tracking; will close existing gaps in coverage.
Possible ground-based laser air defense system	Single system could both track and destroy targets; probably effective only at short range and could be deployed, during this period, only in small numbers.

<sup>a</sup> ASW systems are included with general purpose naval forces, page 88.

The number of strategic interceptor aircraft with at least some capability to track and attack targets at low altitudes will increase rapidly as new or modified interceptors are deployed. We expect the Soviets to introduce a modified version of the Foxbat interceptor shortly. This modified Foxbat is the first Soviet inter-

ceptor with a radar that can look down into clutter to detect and track targets flying below it. (US interceptors have had this capability since the mid-1970s, and other NATO countries will have it by the mid-1980s.)

In the mid-1980s, the Soviets are likely to deploy two new interceptor aircraft (now being tested) that probably will have improved low-altitude capabilities. They are also likely to modify other aircraft in the strategic defense force and introduce several new air-to-air missiles. By 1990, as much as three-fourths of the interceptor force probably will have at least some capability against low-altitude attackers.

In addition, we expect that a new airborne warning and control aircraft that is now being tested will be deployed in the next year or two. This aircraft will be able to track targets at low altitude over land or water; as many as 60 might be deployed by 1990, providing continuous surveillance in a crisis of the main overwater approaches to the Soviet Union.

Recent activities at ABM facilities near Moscow indicate more interest in defense against ballistic missiles than at any time since the mid-1960s, when the Soviets began deploying their current ABM defenses. These activities, together with information on research and development programs related to missile defense, suggest that the Soviets are upgrading and possibly expanding their ABM network. We expect them to deploy several new early warning radars, and they currently are constructing silo launchers as well as another new radar that may have target tracking, missile guidance, and battle management capabilities.

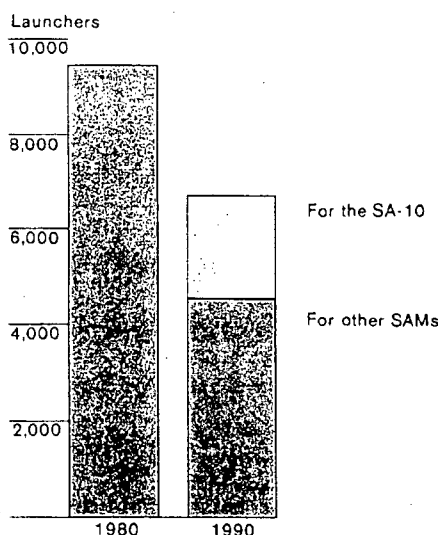
It is possible that the Soviets will field components of the ABM-X-3 system, which is now undergoing developmental testing. This system (unlike the current system at Moscow) will be able to track and engage targets well within the atmosphere, after penetration aids and other extraneous objects have been stripped away by the atmosphere during reentry.

A new ABM system around Moscow could improve the effectiveness of Soviet defenses against light US ballistic missile attacks or attacks by third countries against

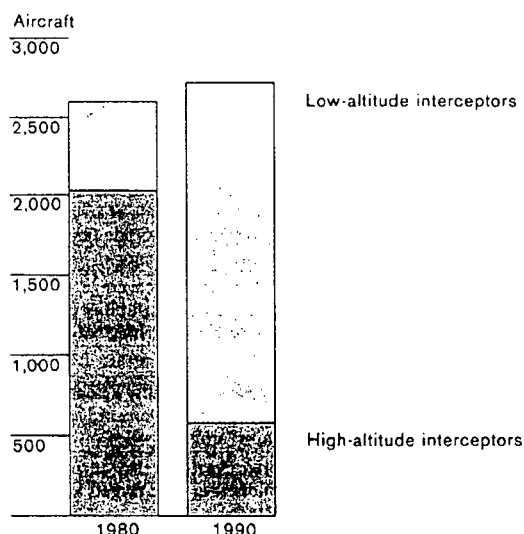
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## Projected Soviet Strategic Air Defense Forces

Strategic Defense Surface-to-Air Missile Launchers



Strategic Defense Interceptor Aircraft



the city. The 100-launcher limit imposed by the ABM Treaty would severely hamper the capabilities of the system against a large-scale US attack. But the upgrading of the Moscow ABM system would place the Soviets in a better position to expand their ballistic missile defenses beyond Moscow should they decide to do so in the future. (The possibility of expansion of the ABM network is discussed on page 97.)

For the 1980s, we project several improvements in systems for destroying or interfering with US satellite systems. The Soviets are testing their current nonnuclear system for intercept of satellites in near-earth orbit and may modify their current system (or develop a new one) for intercept of targets at high

altitudes in synchronous and semisynchronous orbits—where many important US satellites operate.

We expect the Soviets to continue their developmental effort in advanced technologies for air, missile, and space defense. They may now have a ground-based laser capable of damaging some satellite sensors, and there is some evidence of a program to develop a space-based laser weapon that might be used against satellites. The Soviets might also, with a successful high-priority effort, deploy a few ground-based laser air-defense weapons in the mid-to-late 1980s. They evidently are investigating the feasibility of a laser weapon for defense against ballistic missiles and of particle beam weapons for air defense. Such weapons probably could not be deployed in this decade.

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## A New ABM Radar Under Construction Near Moscow

*This radar alone may be capable of tracking more targets simultaneously than both of the existing Moscow battle-management radars can handle together.*

Antisubmarine warfare will remain a high-priority concern of Soviet planners over the next 10 years, as they attempt to repair their weaknesses in ASW against Western (and, in the future, Chinese) missile submarines and to protect their own forces against submarine attack. During the 1980s we expect that emphasis on nuclear-powered attack submarines (SSNs) will increase. The Soviets regard SSNs as the most effective ASW platforms. They probably will construct four or five annually through the 1980s and

might add another one or two each year by converting ballistic missile submarines if they were required to decommission them under SALT constraints. By the end of the decade, the Soviets could have more than 100 SSNs.

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The number of large surface combatants probably will remain about the same over the next decade,<sup>14</sup> but the new ships introduced will have improved ASW sensors and weapons. (We know, for example, that the Soviets are working on at least two improved ASW missiles.) The number of long-range fixed-wing ASW aircraft probably will increase from the current 100 to about 140, and a new shipborne ASW helicopter probably will be introduced in the early 1980s. [ ]

We anticipate continued improvement in the 1980s of Soviet sensors for submarine detection. For the most part the Soviets will make marginal improvements in the types of sensors (primarily acoustic) currently available, and their detection capabilities will continue to lag behind those of the United States. But they probably will also introduce several new types. By the mid-1980s they could deploy towed acoustic arrays, for example, and by the late 1980s they may begin deploying longer range acoustic sensors moored or suspended above the ocean floor. It is also possible that late in this decade they will introduce several new nonacoustic ASW sensors: an airborne laser search system and systems for detecting the wake of a passing submarine. [ ]

Despite these developments, we expect little improvement in Soviet capabilities to detect and track ballistic missile submarines in the open ocean; indeed, the increase in US SSBN operating areas accompanying deployment of the Trident system will exacerbate the Soviet weakness in defense against ballistic missile submarines. [ ]

We believe that the Soviets will continue to complement their military programs for strategic defense with a nationwide civil defense effort. Our data are too tenuous to forecast the precise number or capacity of civil defense shelters that might be available by the end of the 1980s, but an expansion of about 50 percent in shelter capacity is consistent with the available evidence. This and other improvements in civil defense planning and preparations would increase the likelihood that a large percentage of the leaders and the essential work force could survive a nuclear attack. [ ]

<sup>14</sup> See page 87 on future general purpose naval forces. [ ]

Expected increases in the Soviet urban population, however, as well as planned improvements in US strategic forces, would more than offset the increase in shelter capacity, so that the Soviets might expect an even larger number of casualties from an attack in the late 1980s than from one today. Moreover, we do not foresee any significant improvement in the ability of the Soviets to protect their economic facilities from a nuclear strike. [ ]

**Ground Forces and Tactical Air Forces.** We expect little expansion of conventional ground and fixed-wing theater air forces in this decade, but continued qualitative upgrading of both, as well as formation of new combat helicopter units, primarily for ground attack. The number of ground force divisions probably will increase only slightly from its current total of about 185 and the number of fixed-wing tactical combat aircraft probably will remain near 5,000. We expect an increase of about 20 percent in the number of helicopters, to nearly 3,500. [ ]

The principal themes in Soviet development of theater forces in the 1980s are likely to include:

- Widespread deployment of tanks with advanced armor that affords good protection against current NATO antitank weapons.
- Introduction of improved air defense systems that will increase the ability of ground force units to engage multiple targets and low-altitude attackers.
- Increases in firepower through organizational changes and the introduction of weapons with higher rates of fire and improved munitions.
- Deployment of advanced fighters (with improved capabilities for low-altitude intercept) that will complement ground force air defenses and enhance Soviet capabilities to establish air superiority.
- Introduction of new ground attack aircraft and attack helicopters with increased ranges and payloads and more accurate munitions, which will improve the capability of tactical aviation to attack point targets and to support ground force operations. [ ]

## Projected Ground Forces Weapon Systems

System	Comment
<i>Early 1980s</i>	
SA-11 surface-to-air missile	Medium-range divisional weapon with improved capability to engage multiple targets.
T-80 tank	Slightly heavier than T-72 and marginally improved in capability.
New towed and self-propelled guns and mortars	Improved mobility and rates of fire; may be capable of firing nuclear artillery shells.
SA-X-12 army- and front-level surface-to-air missile	Improved capability to engage multiple targets at long ranges; possible limited capability against short-range ballistic missiles.
Heliborne antitank missile	Improved accuracy, more effective warhead.
<i>Mid-1980s</i>	
Follow-on to T-80 tank	Probably will incorporate major improvements in armor protection, firepower, and mobility.
New armored personnel carriers	Improved mobility; protection of personnel enabling them to operate in toxic environment.
Follow-on to ZSU-23-4 antiaircraft gun	Longer range and larger caliber.
New surface-to-air missile	Improved capability to engage low-altitude targets.

Our evidence on development programs and our understanding of the development process are not as advanced for ground force equipment as for other weapon systems. This limits our ability to project new weapon programs, especially those likely to enter the forces late in the decade. Nevertheless, we do have evidence on several systems that probably will be deployed in the next few years. [ ]

The Soviets are about to begin producing a new tank (apparently designated T-80), with incremental improvements over the T-64 and T-72, and an even more advanced tank could enter production in the mid-to-late 1980s. They may currently be testing modified versions of the T-64 and T-72 tanks equipped with antitank missiles. By the end of the decade, most major ground force units in the USSR probably will be

equipped with the T-64, T-72, or T-80, and some of the first-line units in Eastern Europe probably will have the more modern tank. [ ]

We expect the Soviets to upgrade division air defenses by continuing to deploy the SA-8 SAM and introducing the SA-11. These systems will increase the range at which divisions can engage air targets, their ability to track multiple targets simultaneously, and the number of launch rails available. We also expect the introduction (at the front and army level) of an advanced long-range tactical air defense system that we designate SA-X-12. This system could be effective against high-performance aircraft and tactical ballistic missiles like the US Lance. We know the Soviets are working on another system to intercept tactical ballistic missiles, but we cannot confidently project its deployment—depending on its characteristics, it could be prohibited under the ABM Treaty. [ ]

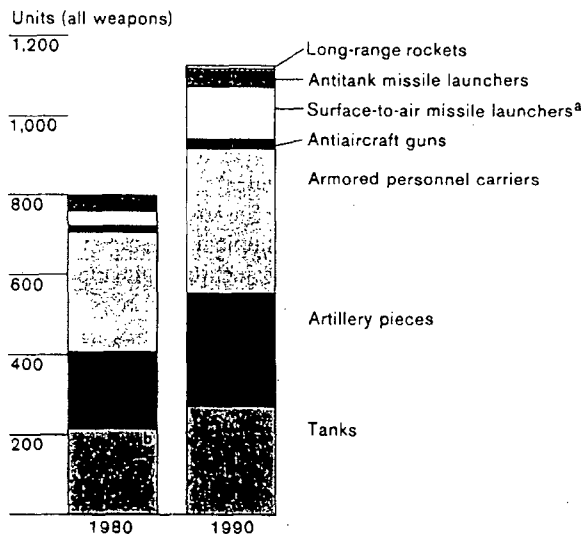
Divisional firepower will continue to increase as deployment of the newer self-propelled artillery pieces continues and as more advanced guns and rocket launchers are deployed. We also expect the forces to receive improved conventional munitions—such as fuel-air explosives and cluster projectiles—that will increase the lethality of their weapons. [ ]

The Soviets will probably reorganize the Ground Forces divisions to make them more heavily armed, mobile, and self-sufficient than current units, but we are uncertain about the details. In their tank and motorized rifle divisions, the Soviets have been experimenting with new structures which improve the capabilities of tank regiments for combined operations of armor, infantry, and artillery and which increase firepower. At least some organizational changes have taken place in about 60 divisions. If the use of these new structures is expanded, the manpower, number of weapons, and firepower in divisions will continue to increase. [ ]

We know of several new aircraft that are likely to be deployed with Frontal Aviation in this decade. A large new fighter and a small one probably will enter service in the mid-1980s. We expect that they will have improved capabilities against targets at low altitudes and will be better suited than current aircraft for close-in maneuvering combat. By the end of the decade, these

## Projected Improvements in First-Line Soviet Motorized Rifle Divisions

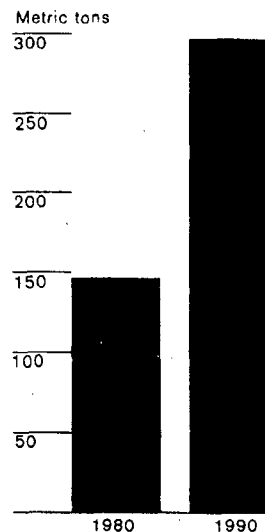
Major Weapons in a First-Line Motorized Rifle Division



<sup>a</sup> Excludes man-portable launchers.

<sup>b</sup> In 1980, some motorized rifle divisions had 40 tanks more than the number shown here.

Firepower of a First-Line Motorized Rifle Division<sup>c</sup>



<sup>c</sup> Firepower is calculated as the weight of ordnance deliverable by divisional artillery in a three-minute surge.

two aircraft could make up about three-fifths of the roughly 2,000 interceptors we project. [ ]

The Soviets have also tested an aircraft designed for close support of ground forces—the first Soviet aircraft specifically designed for this role in over 30 years (see photo on page 85). Deployment of this aircraft is expected to begin soon. We anticipate two other ground attack aircraft programs: one for a modified version of the Fencer and the other for a new fighter-bomber (or possibly a variant of the small new fighter) to replace Flogger and Fitter fighter-bombers. In addition, the Soviets will introduce new weapons, probably including one or more new tactical air-to-surface missiles. [ ]

We expect the Soviet fixed-wing ground attack force to have increased in size only slightly by 1990, but these

three new aircraft could make up nearly 60 percent of the total. Some of the new ground attack aircraft probably will be modified for reconnaissance roles, and by the end of the decade they could account for nearly half of a tactical reconnaissance force of over 600 aircraft. [ ]

These fixed-wing aircraft programs will improve Soviet capabilities to achieve air superiority in theater war and to destroy targets on the ground. We anticipate a continuing increase in the range and payload capabilities of Frontal Aviation. Moreover, the widespread deployment of advanced ground attack aircraft with better avionics and precision weapons will improve the ability of the force to destroy point or area targets with the same payload weight (see chart on page 86). [ ]

## Projected Tactical Aviation Aircraft

System	Comment
<i>Early 1980s</i>	
Ground support aircraft <sup>a</sup>	Improved capabilities for close air support of ground forces.
Halo heavy-lift helicopter	Twice the lift capacity of earlier models.
Follow-on to Hind attack helicopter	Incremental improvement in capabilities for close air support.
Modified Fencer tactical bomber <sup>a</sup>	Better avionics and engines for improved deep attack capabilities.
<i>Mid-1980s</i>	
Two new fighters <sup>a</sup>	Improved capabilities against low-altitude targets and for establishing air superiority over hostile territory.
<i>Late 1980s</i>	
New fighter-bomber <sup>a</sup>	Incremental improvement in ground attack capabilities.
New attack helicopter	Incremental improvement in close air support capabilities.

<sup>a</sup> Could be used for delivery of nuclear weapons.

We expect continued expansion of the Soviet attack helicopter force. A new version of the Hind, which represents an incremental improvement over the helicopters currently in the force, is now being tested. An entirely new helicopter, with a more substantial improvement in weapon delivery capabilities, could be fielded in the late 1980s. [ ]

The Soviets probably will slightly expand their force of support helicopters, by increasing the number of Hip medium-lift helicopters and by beginning in the next year or two to deploy the new Halo heavy-lift helicopter, which has twice the payload capability of the current Hook. This will improve the Soviet potential to transport weapons and equipment for rapidly advancing ground forces. [ ]

## New Soviet Ground Attack Aircraft

*This aircraft has been tested by Soviet forces in Afghanistan.*

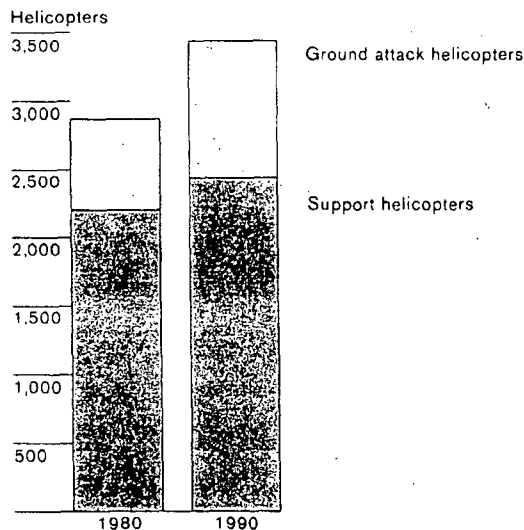
**Theater Nuclear Forces.** The fixed-wing aircraft programs projected for Soviet tactical aviation forces, as well as other new systems, will improve Soviet capabilities for theater nuclear war. Unless offset by Western programs or by arms control agreements, these improvements will further erode NATO's theater nuclear advantage and the effectiveness of a threat of theater nuclear war as a deterrent to conventional attacks by the Warsaw Pact. [ ]

The Soviet programs that we have identified include nuclear delivery systems for employment at various distances, from short-range artillery systems to long-range missiles and aircraft based in the USSR. The new systems will be more accurate than their predecessors; some of the short-range missiles, for example, may eventually have terminal guidance systems. With this accuracy the Soviets can attack theater targets

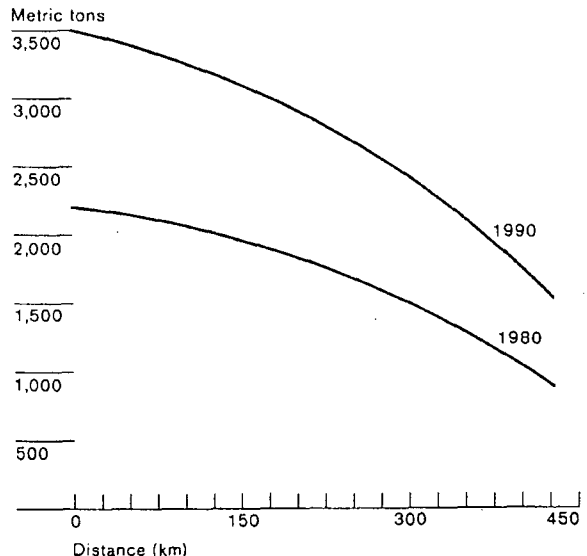
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## Projected Soviet Tactical Aviation Forces

### Combat and Support Helicopters



### Payload That Soviet Tactical Aircraft Could Deliver in Europe<sup>a</sup>



<sup>a</sup>This shows the maximum weight of weapons (missiles or bombs) deliverable in one sortie, as a function of distance. A sortie is assumed to include all of the Soviet tactical aircraft in Central Europe.

with weapons of lower yields, reducing damage to surrounding areas that they might want to preserve, and can use nuclear weapons close to friendly troops.

The new nuclear delivery systems will have better reaction times, giving the Soviets greater confidence that they can launch preemptive strikes before enemy forces can unleash a large-scale attack. Finally, short- and medium-range theater nuclear weapons (those with ranges of less than 1,000 km) will increase both in absolute number and in their share of the total delivery systems. This will give the Soviets more flexibility in fighting a nuclear war in the 1980s and confining it to non-Soviet territory.

In the mid-1970s, the Soviets introduced the SS-21 short-range ballistic missile (SRBM) to augment or

replace the older FROG series of weapons. The SS-21, which offers greater range and better accuracy than the FROG, has been fielded in limited numbers to date, but we expect more widespread deployment soon. In addition to the SS-21, the Soviets have developed another SRBM with a longer range, the SS-X-23, which they may be fielding. They are working on yet another short-range missile that could be deployed later in the decade. They have already introduced the SS-22, a more accurate replacement for the 900-km SS-12 Scaleboard. By the mid-to-late 1980s, the Soviet inventory of battlefield SRBM launchers could increase by as much as 40 percent, to nearly 1,000.

The Ground Forces are continuing to receive heavy artillery brigades equipped with nuclear-capable guns and mortars. By the late 1980s, the total number of

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such artillery pieces could increase as much as 70 percent, to some 850. The Soviets may have introduced nuclear landmines, and they might augment their theater nuclear delivery systems by deploying nuclear warheads for tactical surface-to-air missiles. (Some SAMs for strategic defense already have nuclear warheads.) They have the capability to develop and produce neutron-enhanced radiation weapons, but we do not know if they will do so. [redacted]

We anticipate that the number of long-range theater nuclear delivery vehicles based in the USSR will decline to less than 1,000 in 1990. The Soviets will continue, however, to upgrade the quality of peripheral strike forces. We expect them to continue deploying the SS-20 IRBM for another year or two, until they have some 350 to 400 mobile launchers. An improved SS-20, with better accuracy and reliability, probably will begin to replace the earlier version in the next few years. (While they deploy SS-20 launchers, the Soviets could retain a number of launchers for older SS-4 medium-range missiles.) [redacted]

The Soviets will also modernize their force of peripheral attack bombers by deploying the Backfire and possibly (depending on SALT constraints) equipping it with a long-range cruise missile. We expect the total number of peripheral bombers in Long Range Aviation to decline to less than 500 aircraft by the end of the 1980s. (About 100 of them will be stationed opposite China.) Among the 500, there probably will be over 200 Backfires—more than three times as many as are deployed at present. [redacted]

We expect the Soviets to phase out their force of G-class diesel-powered ballistic missile submarines by the end of the decade. By deploying new SSBNs carrying MIRVed missiles, however, they will increase the number of submarine-launched warheads and improve the capability of the missile submarine force to attack targets in Europe and Asia as well as in the United States. [redacted]

The new weapon systems to be introduced in the 1980s will give the Soviets greater flexibility in employing nuclear weapons at the theater level, and we expect them to explore new options. Since the early 1960s, Soviet concepts of escalation and theater warfare have become more flexible, and we expect this trend to

### Projected Battlefield and Peripheral Nuclear Delivery Systems \*

System	Comment
<i>Early 1980s</i>	
SS-X-23 short-range ballistic missile	Improved payload and accuracy.
Modified version of SS-20 IRBM	Improved accuracy.
<i>Mid-1980s</i>	
Improved version of SS-21 SRBM	Improved accuracy.
<i>Late 1980s</i>	
New short-range ballistic missile	
Improved version of SS-X-23 missile	

\* See table on page 85 for a listing of projected tactical fighter-bomber aircraft that could be used for delivery of nuclear weapons.

[redacted] continue in the 1980s. In the coming years, the Soviets will continue to evaluate new strategies for limited or selective initial use of nuclear weapons and control of escalation, including further reducing reliance on nuclear delivery systems based in the USSR. But they probably will remain doubtful that escalation to widespread nuclear war can be prevented. [redacted]

**General Purpose Naval Forces.** The major themes in development of naval forces in the 1980s will be continued emphasis on open-ocean forces and on deploying air power to sea. New programs will strengthen the air defenses of Soviet ships, as well as their antiship capabilities and their ability to operate at sea for extended periods. ASW will remain a major weakness, but new Soviet submarines will be more difficult to detect, reducing the West's ASW advantage. [redacted]

In overall size, the general purpose navy probably will not increase, and it may even decline slightly over the decade. In force structure, however, the changes that have characterized its development in the Brezhnev era are likely to continue. The number of naval aircraft (especially those deployed on ships) probably will increase. The number of large surface combatants probably will remain fairly stable; virtually all will carry missiles by 1990. The submarine force and the force of

small surface combatants will improve in quality, though each probably will decline slightly in number of units. [ ]

The principal tasks that have spurred the development of Soviet Naval Aviation in the past—strikes at enemy ships, reconnaissance, and ASW—will be the principal determinants of force structure in the 1980s. We expect increasing emphasis on open-ocean ASW, however, as well as an expansion in the deployment of shipborne tactical aircraft as new and larger aircraft carriers are built. [ ]

We expect a continuing increase in the number of naval aircraft, especially ASW aircraft and shipborne fighters. Naval Aviation's force of antiship strike aircraft probably will decline slightly in size; more than half of it probably will be naval Backfire aircraft intended for attacks against surface ships in the open ocean. [ ]

We expect a numerical decrease in the Navy's reconnaissance force, as older Bear, Blinder, and Badger aircraft are phased out and replaced by a new, long-range reconnaissance aircraft with improved range and sensors. We also anticipate introduction of a new shipborne reconnaissance helicopter in the mid-1980s. We project a continuing increase in the number of aircraft for antisubmarine warfare, with the introduction in the next year or so of an improved ASW helicopter, continued production of the Bear F long-range ASW aircraft, and the introduction in the late 1980s of a new long-range aircraft. [ ]

The component of Naval Aviation due for the greatest change is probably the shipborne fighters. As the third and fourth Kiev-class aircraft carriers enter the force, the Soviets will continue deploying the Forger vertical and short takeoff and landing (VSTOL) aircraft; they probably will introduce an improved VSTOL aircraft in the late 1980s. [ ]

More significant is our evidence of Soviet activities that suggest the development of a new aircraft carrier. Such a ship could be introduced in the late 1980s and probably would have nuclear power. It could carry standard fighter or attack aircraft (probably variants of a tactical aviation aircraft) that would have much greater ranges and payloads than the current VSTOL

## Projected General Purpose Naval Ships and Aircraft <sup>a</sup>

System	Comment
<i>Early 1980s</i>	
Five new classes of large surface combatants (including the first nuclear-powered surface warship)	Improved range and endurance; improved antisubmarine sensors and weapons; new long-range antiship missile on some classes.
New cruise missile submarine	New long-range antiship missile.
New ASW helicopter	Improved sensors.
<i>Mid-1980s</i>	
New classes of attack submarines	Improved ASW sensors; reduced noise levels.
New long-range fixed-wing reconnaissance aircraft	Improved range, speed, endurance, and sensors.
New reconnaissance helicopter	Improved endurance and sensors.
<i>Late 1980s</i>	
Nuclear-powered aircraft carrier; new shipborne fighter aircraft	Capability to carry standard fighter aircraft; improved range and endurance.
New long-range fixed-wing ASW aircraft	Improved range, speed, endurance, and ASW sensors.
Improved VSTOL aircraft for use on Kiev-class carriers	Better range; improved weapons and avionics.
Second class of nuclear-powered cruisers	Improved range and endurance.

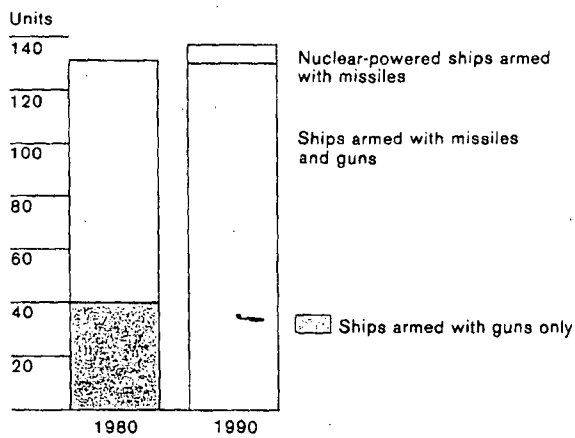
<sup>a</sup> This table lists only the principal ships and aircraft projected.

fighters. Deployment of this ship would improve the capabilities of the Soviet Navy to protect its surface ships against air attack and to project air power away from Soviet shores. [ ]

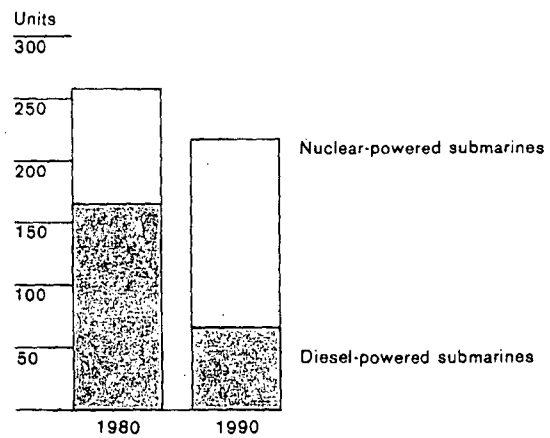
In addition to the new aircraft carrier, the Soviets are working on a number of other programs for surface combatant ships. They are currently constructing four new classes of cruisers, including their first nuclear-powered surface combatant, the Kirov-class cruiser. Two of these classes probably will carry new cruise missiles (intended to improve Soviet capabilities against enemy surface ships that carry short-range

## Projected Soviet General Purpose Naval Forces

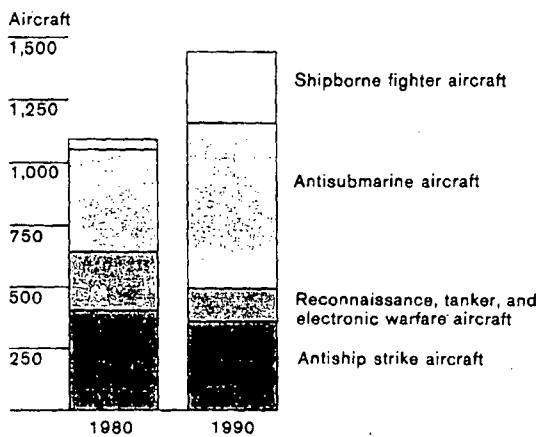
### Large Surface Combatants



### General Purpose Submarines



### Naval Aircraft<sup>a</sup>



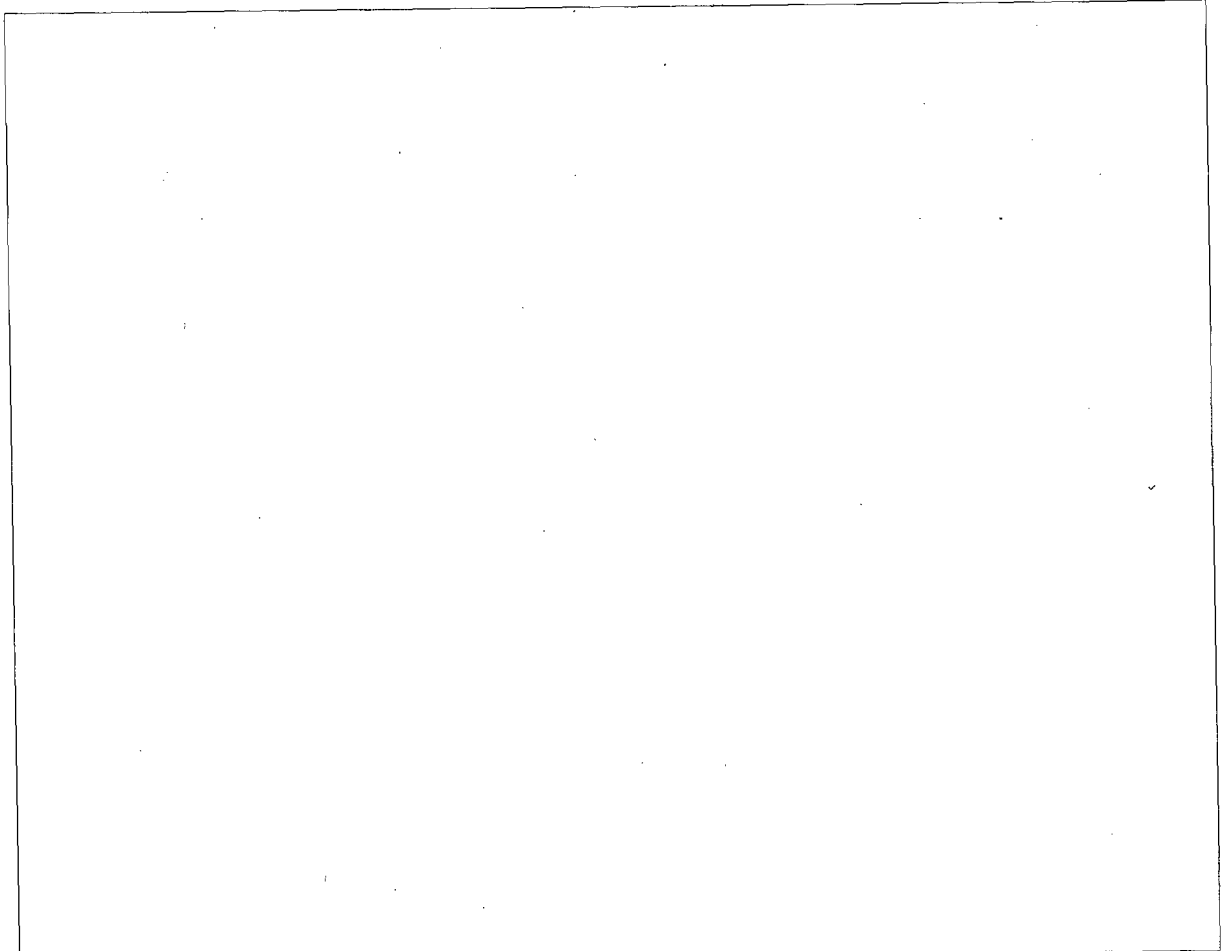
<sup>a</sup>The figures for antisubmarine and reconnaissance aircraft include some helicopters that can be carried on ships. All other Soviet naval aircraft, except shipborne fighters, are land-based.



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## The O-Class Nuclear-Powered Submarine



*This new SSGN carries 24 launchers for the SS-NX-19 long-range cruise missile.*

[redacted]

missiles and missile defense systems) as well as surface-to-air missiles, including a naval version of the SA-10. One of the cruiser classes has medium-caliber naval guns suitable for antiship warfare and the support of amphibious operations. [redacted]

[redacted]

A program for a new frigate is under way, and we project construction of a second, smaller class of nuclear-powered cruisers, beginning in the late 1980s. As these and other programs are pursued, the proportion of ships armed with missiles will continue to increase. Thus, although we expect the number of large surface combatants to remain fairly stable, all of the force in

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1990 will consist of missile-equipped ships and as much as 5 percent could be nuclear-powered units. [redacted]

The Soviet force of general purpose submarines (cruise missile and torpedo attack) probably will continue to decline in size to the end of the decade. Nearly 70 percent will be nuclear powered by 1990, however, in contrast to about one-third at present. Moreover, we expect the submarines constructed in the 1980s to be quieter than those currently in the force, reducing the ability of Western ASW forces to detect and track them. [redacted]

Emphasis on nuclear-powered torpedo attack submarines probably will increase. We expect the number of nuclear-powered cruise missile submarines (SSGNs) to decline, both in absolute terms and as a share of the force. The number of cruise missile launchers carried on submarines probably will increase, however; a new class of cruise missile submarines, armed with 24 launchers for the SS-NX-19 long-range cruise missile, is being introduced to replace older units with fewer launchers. [redacted]

While emphasizing nuclear power, we expect the Soviets to also continue construction of diesel-powered submarines, for their own forces and for export. They introduced a new small, diesel-powered attack submarine (SS) in 1980. [redacted]

Current naval construction programs indicate that the Soviets intend to maintain a large number of small surface combatant ships for use against enemy surface ships and submarines in waters close to the USSR. Five classes of small combatants are being produced, and prototypes for three others have been identified. The small combatant ships entering service in the 1980s probably will be characterized by:

- The use of hydrofoils to attain higher speeds.
- Emphasis on surface-to-surface missiles.
- Improved defense against enemy aircraft.
- Better guns for use against other surface ships. [redacted]

**Power Projection Forces.** Introduction of an aircraft carrier equipped with standard fighter and attack aircraft would improve the capability of Soviet naval forces to project power and would provide for the first

### Projected Amphibious Ships and Transport Aircraft

System	Comment
<i>Mid-1980s</i>	
New tank landing ship	Could carry about 300 troops on distant deployment.
New heavy transport aircraft	Lift capacity similar to that of US CSA heavy transport.
New medium-range tactical transport aircraft	Medium-lift transport for theater operations.

time the capability to provide air support in distant areas. But the Soviets will not have enough carriers to establish a continuous presence in distant areas in the 1980s. There probably will be some improvement in the Soviet Navy's capability for amphibious assault and in the airlift capabilities of transport aircraft. [redacted]

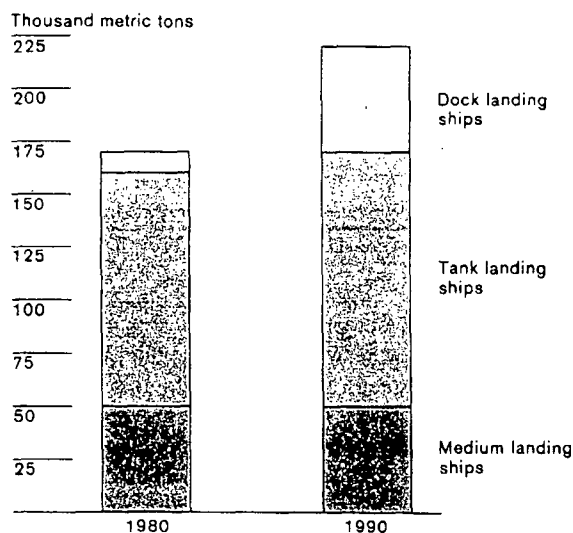
We expect that power projection programs will continue to rank behind strategic and general purpose theater programs in Soviet military priorities for this decade. But the programs of the 1980s could set the stage for further development of a long-range power projection capability in the 1990s. [redacted]

The Soviets will complete the second landing ship of the Ivan Rogov class and may build one or two more. They may introduce a new class of tank landing ship in the mid-1980s and could have as many as 12 by the end of the decade. If all of these programs are completed, the theoretical capability of Soviet amphibious ships to lift Naval Infantry forces to distant areas would increase by about 25 percent, to nearly nine regiments (about 17,000 men and their equipment). In practice, the capability of the force would be less, because not all ships would be ready for operations and some would be engaged in other tasks. [redacted]

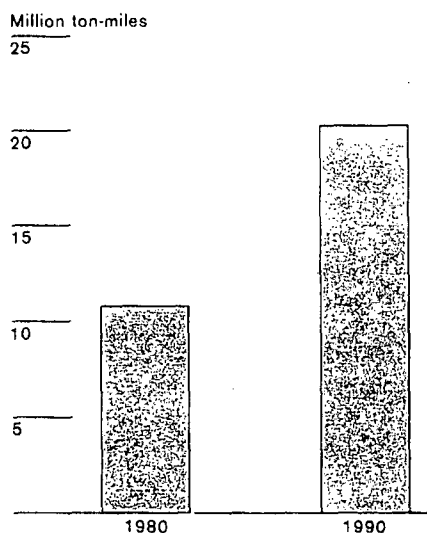
The Soviets could augment their capability for sealift of troops to distant areas by using merchant ships. They are improving the potential of the merchant marine to undertake military support operations by acquiring ships with self-contained advanced cargo-

## Projected Soviet Sealift and Airlift Forces

Tonnage of Naval Amphibious Ships



Daily Ton-Mile Capability of Transport Aircraft<sup>a</sup>



<sup>a</sup>The ton-mile is a measure based on the following: the number of aircraft in the inventory; their average payload and cruise speed; the number of hours they are expected to fly daily; and a factor that takes into account the unproductive return portion of a mission.

handling systems. These can discharge mechanized equipment more rapidly than conventional merchant ships, and some can do it almost as rapidly as amphibious warfare ships.

The lift capacity of Soviet Military Transport Aviation probably will continue to increase as the force acquires more IL-76 heavy transports in the early 1980s. The daily ton-mile capability of the force, for example, could increase by 10 to 20 percent. Even with this increase, however, it would remain less than half of the 1980 US capability. Moreover, the increase in capability probably will not keep pace with the needs of the airborne forces, as they receive more and heavier equipment. Late in the decade, the Soviets may develop a follow-on to the AN-12 medium-range tactical transport or equip some of their transports for aerial refueling.

The Soviets are reportedly working on a large, long-range transport, similar in size to the US C5A. This program is apparently behind schedule, reportedly because of difficulty in developing a suitable engine, and it does not appear to have had a high priority. If the technical problems are solved soon, the Soviets could introduce the new long-range transport in the mid-1980s and could have 60 to 65 by the end of the decade. This would give them an airlift capability in 1990 about three-fourths that of US forces today.

**Satellites and Command and Control Systems.** We believe that the Soviets will continue to use and improve virtually all their current types of military satellite systems through the 1980s and will introduce many new systems as well. They may develop a new military space station and perhaps a continually manned complex of several stations. Like previous

military space stations, we expect the new ones to carry photographic and electronic intelligence sensors. ☐

The Soviets are developing a small, reusable "space plane" that could be a ferry vehicle for space stations or play a reconnaissance or satellite inspection role. During the 1980s, they apparently intend to make considerably more use of satellites in high-altitude orbits for communications, meteorology, and navigation. We also expect the Soviets to launch:

- Advanced photographic reconnaissance systems capable of transmitting data to ground bases electronically.
- Improved radar systems for ocean reconnaissance.
- Improved high-altitude electronic intelligence systems. ☐

In the early 1980s the Soviets probably will be able to complete their launch-detection satellite network to provide greater reliability for their existing continuous coverage of US ICBM complexes (page 10). This would give them greater confidence that they could launch a massive flight of their own ICBMs on receipt of warning that an ICBM attack was under way from North America and before its impact. The Soviets probably will not, however, achieve similar coverage of SLBM launch areas in this decade. ☐

We expect the trend toward more centralized command systems to continue over the 1980s. In addition to new communications systems based on satellites, the Soviets probably will continue to emphasize mobility for their communications equipment and to make greater use of computers and data link communications for the control of forces. They probably will also continue their policy of deploying the same communication systems to all of the military services. ☐

#### Projected Doctrine, Strategy, and Operations

The new weapon systems and capabilities that Soviet forces will develop in this decade will give Soviet leaders increased flexibility in the employment of their military power. We have little direct information about how the new flexibility will affect their strategies for using their forces. However, on the basis of recent Soviet writings, trends we have observed in the development of doctrine, and the characteristics of future Soviet weapons, we can draw some inferences as to

#### Projected Military Space Systems

System	Comment
<i>Early 1980s</i>	
"Space plane"	Reusable spacecraft for resupply and support of space stations or for reconnaissance.
Geostationary meteorological satellite	Continuous coverage of a large area.
New photoreconnaissance satellite	Capable of transmitting stored data to ground stations.
Completion of launch detection satellite system	Will provide continuous and reliable coverage of US ICBM complexes.
<i>Mid-1980s</i>	
High-altitude electronic intelligence (ELINT) satellite system	Will provide nearly continuous coverage of large areas.
<i>Late 1980s</i>	
Advanced satellite navigation system	For continuous, accurate positioning of land, sea, and air forces.
Electro-optical reconnaissance system	Will provide nearly instantaneous transmittal of data to ground stations.
Advanced radar ocean reconnaissance satellite	Improved capability to provide nearly instantaneous targeting data.

Soviet intentions for wartime and peacetime use of their forces. ☐

We expect that the Soviets will continue to emphasize counterforce strikes in intercontinental and theater operations:

- For strategic forces, this means they will target weapons against enemy intercontinental delivery systems and the elements, particularly command and control facilities, that support those systems.
- For general purpose naval and air forces, the principal targets in the early stages of a war will continue to be enemy theater nuclear weapons.
- They will work to improve capabilities for launching their strategic forces on tactical warning. ☐

### **Ogarkov on Soviet Military Strategy**

*A recent article on military strategy by the Chief of the General Staff provides some insight on areas of continuity and change in Soviet concepts. The article notes that the goal of Soviet strategy continues to be "the defeat of the aggressor." It characterizes a future world war as decisive and global in scope. While acknowledging that a world war could be conducted at a conventional level for an indeterminate time, the article also states that it could lead to general nuclear war. Such a war is described as probably being short, but "it is not excluded that it can also be lengthy." The article also discusses the possibility of "local wars." It notes that they can escalate into world war, but also leaves open the possibility of long wars that are limited in area and scope.*

*In discussing concepts, the article lists several characteristics of a future war:*

- *An increasing emphasis on seizing the initiative.*
- *A premium on maneuverability.*
- *The possibility of deep penetrations and the lack of continuous front lines.*
- *Rapid changes in the strategic situation.*

*The article advocates that all the armed forces give greater attention to combined operations and to flexibility and secrecy of control. It points out the continuing possibility of surprise attack against the USSR and calls for high combat readiness to counter it. Finally, while continuing to emphasize offensive operations, the article notes that under certain conditions Soviet forces may have to adopt a defensive posture.*

[ ]

The Soviets are thinking about ways to wage a nuclear war. They probably will experiment with ways to control or manage escalation from conventional to nuclear war, including:

- Improving the theater nuclear capabilities and options of forces deployed outside the USSR.
- Possibly examining options for the selective use of strategic forces. [ ]

It also appears that the Soviets are seriously considering the prospect of protracted intercontinental nuclear operations. We believe they have contingency plans for such an eventuality and that prospective improvements will be designed to improve the performance of their forces under conditions that would exist after an initial strategic nuclear exchange. [ ]

More attention will be given to developing forces for a protracted conventional conflict and to developing forces and tactics suitable for waging local wars. The Soviets probably will also maintain a high level of military activity in the Third World to achieve both military and political goals. They probably will stress military aid and advisers, but the further expansion of aid and advisory programs will be influenced both by the attitude of clients and the condition of the world market. If past trends continue, the Soviets may be more willing to use their own forces instead of surrogates in combat roles in the Third World. [ ]

We expect Soviet naval ships to continue to make several hundred port calls in the Third World each year and, as the decade progresses, to employ increasingly sophisticated ships in this role. The overall pace of operations of Soviet general purpose naval forces probably will fluctuate around its current level. [ ]

### **Projected Military Spending**

To carry out the military programs described in our baseline projection, the Soviets will have to increase defense expenditures in real terms throughout the 1980s. The evidence currently available indicates that they are prepared to do this:

- The number of Soviet weapon systems in production and the production rates of major weapons are at high levels that are consistent with past trends.

- The number of weapon systems in flight test and trials—an indicator of the systems that are likely to enter production in the next few years—also remains at the historic level.
- Capital construction is under way at a number of key defense R&D facilities and production plants in preparation for the development and production of other new weapons farther down the road.
- The addition of men and equipment to the Soviet forces is continuing, although at a more moderate pace than in the 1960s and 1970s.
- The Soviets have published targets for their next five-year plan for total economic growth and for its civilian components (investment and consumption), which leave ample room for continued growth in defense spending.

The precise rate of increase is difficult to predict. Our calculation of the costs associated with the baseline projection suggests that the rate could range from about 4 to less than 2 percent per year.

The higher figure reflects the estimated cost of the forces we project assuming the absence of SALT constraints and assuming that the Soviets do not cut back the support structure of their armed forces. A 4-percent rate of growth would be a continuation of past trends and consistent with our evidence on development and production activities.

The lower figure reflects the estimated cost of these same forces if we assume that, as economic growth slows, the Soviet leaders will have an increasing incentive throughout the 1980s to reduce the growth of defense spending. They could reduce the growth of military expenditures by roughly 2 percentage points if they took advantage of the potential savings from a SALT II agreement (or another agreement with a comparable impact on the size of strategic forces and the introduction of new systems) and made other marginal adjustments in planned military programs. These adjustments could include:

- Curtailing some weapon programs that are near the end of their production runs. This would permit the temporary transfer of some resources to civilian

production, but retain the option of further force modernization through follow-on programs.

- Cutting back or eliminating some support programs, such as those for naval auxiliary ships and transport aircraft, and increasing the use of merchant ships or civil aircraft to support military operations.
- Stretching out some weapon procurement programs and slipping the time schedule for force modernization slightly.
- Working to improve analysis of alternative future military forces, efficiency in the defense industries, and economy in the use of supplies by the military.
- Reorganizing the forces to improve efficiency and reduce or eliminate duplication in missions.
- Scrutinizing the military R&D programs more closely and possibly cutting back some marginal activities.

These adjustments could be risky from the point of view of a conservative Soviet military planner, and probably would be opposed by powerful defense and defense-industrial interests. Nevertheless, if pressed, the Soviet military leaders could make alterations that would not significantly affect the ability of the forces to carry out their most important missions in the 1980s.

If the Soviets made these changes, they could spread them out among the military services and missions and thus minimize their impact on the size and overall rate of modernization of the forces. (For example, they would not have to forgo any of the major weapon programs discussed in the baseline projection, although in some instances they might—depending on the magnitude of the adjustment—have to slip some of their force modernization goals.) This is because the Soviets are already investing so much in military hardware that merely continuing procurement at the existing level would ensure an increase in their stocks of military equipment and the improvement of their military capabilities.

If Soviet defense expenditures were to increase at 4 percent per year, the military share of GNP (and of the annual economic growth dividend) would increase through the 1980s. At 2 percent, the military share of each would remain about the same as at present. The estimated dollar cost of all Soviet military activities during the entire 1981-90 period, under the baseline projection, would be on the order of \$2 trillion (1979 prices). [ ]

#### Alternative Projections: Options and Discontinuities

If we alter some of the assumptions that underlie the baseline projection, future trends in Soviet military policies might be considerably different. We therefore present in this section three alternative projections, two high and one low. [ ]

To place realistic bounds on the alternatives, we have examined trends in Soviet defense expenditures over the past 30 years and chosen the periods of the most rapid sustained growth and the largest absolute reductions to represent the limits of Soviet options. These periods were:

- The early 1960s, when the rapid buildup of strategic forces and space programs caused defense expenditures to increase at a real average annual rate of growth nearly twice that exhibited in the 1970s.
- The late 1950s, when Khrushchev's restructuring of military forces sent expenditures on current forces down by 1 to 2 percent a year. (The resources saved, however, were shifted to build up military R&D and production facilities.) [ ]

On the basis of these precedents, we assume for our two high projections that growth in Soviet military spending increases to almost double that in the baseline projection and for our single low projection that the level of real military spending is reduced by 2 percent per year (see chart on page 97). [ ]

We consider both of these extreme assumptions unlikely. The high alternatives would entail serious risk of disruption to economic and political relationships within the USSR. The low alternative, on the other hand, would entail serious political and military risks

outside the country—and probably would be opposed by powerful military and defense-industrial leaders and organizations. But these projections, however unlikely, permit us to explore what might follow if the Soviets adopted in the 1980s some variant of a military program that has a precedent in recent history. [ ]

We discuss below the high projection in which the increased effort is channeled to strategic forces and on page 98 the one in which it is channeled to general purpose programs. (These are intended to illustrate the range of Soviet options. Other choices are open to the Soviets, including mixtures of elements from these two projections.) For both of these projections, we discuss the changes the Soviets might make in their forces, as well as the circumstances that might cause such changes and the impact the changes could have on the economy. [ ]

A similar discussion of the low projection begins on page 100. Finally, on page 101 we discuss the clues that intelligence sources might provide that would help us to detect (in its early stages) any discontinuity in Soviet military policy. [ ]

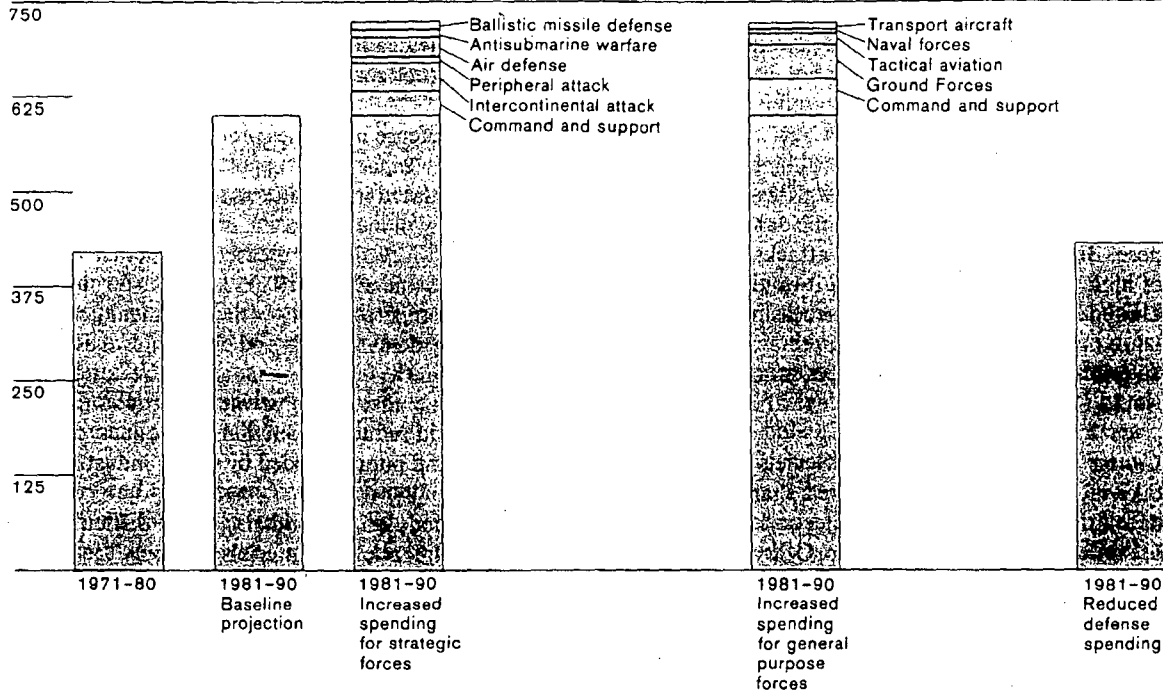
#### Stepped-Up Strategic Competition

**Effect on Military Capabilities.** If the Soviets were to repeat in the 1980s the defense spending pattern of the early 1960s and were to focus their efforts on strategic programs, they could expand their strategic forces considerably over those presented in our baseline projection. For example, by 1990 the Soviets:

- Could have some 3,450 intercontinental delivery vehicles in their forces, compared to some 2,250 to 3,150 in the baseline projection. (The range in the baseline projection, page 76, reflects varying assumptions about arms limitation agreements; this high projection reflects the assumed absence of treaty constraints and a more rapid pace of technological improvements than is reflected in the baseline projection.)
- Could equip these delivery vehicles with more than 31,000 individual weapons, of which about 18,000, or nearly 60 percent, could be suitable for use against hardened targets.

## Baseline and Alternative Projections of Soviet Investment and Operating Expenditures

Billion 1970 rubles



Our estimate of Soviet investment and operating expenditures for 1971-80 is shown at left. The baseline projection is our best judgment of what the Soviets will spend on military investment and operation during the 1980s. The other bars present our view of three possible variations from this baseline.

- Could increase the number of peripheral strategic delivery vehicles to some 1,300 to 1,400, compared to less than 1,000 in the baseline projection.
- Could have more than 9,000 strategic SAM launchers in the field, about one-third more than in the baseline projection (page 78). More than half of the 9,000 could have some capability against low-altitude targets.
- Could deploy some 3,400 strategic interceptors—some 25 percent more than in the baseline projection.

(About 85 percent of these would be suitable for operations against low-altitude attackers.)

- Could field an ABM network of some 900 launchers at 150 sites, and improve their ABM battle management capabilities. (This would require abrogation of the ABM Treaty.)
- Could build 25 more ASW submarines than we forecast in the baseline projection (page 81) and about 50 more long-range ASW aircraft.



These programs would permit the Soviet strategic forces to target a large number of US Minuteman ICBM silos and M-X shelters, while still retaining many weapons for other targets. Their own survivability would be improved by increases in the number of delivery vehicles and in the number of land-mobile and submarine-launched missiles. Soviet capabilities to counter penetrating bombers would improve more rapidly than in the baseline projection. ☐

The expanded ABM network would increase the planners' confidence in their defenses. It would provide improved capabilities to reduce the damage from Chinese, British, or French nuclear attacks against targets of high value to the Soviets, and it would require the United States to develop countermeasures and allocate large numbers of weapons to suppressing missile defenses. Soviet ASW capabilities would improve, but would still be limited by technological constraints. ☐

**Causes and Consequences.** The Soviets might undertake such a program if there were a sharp deterioration in relations with the United States and a complete breakdown of the SALT process. Other circumstances that would bear on a Soviet decision to upgrade their forces with emphasis on strategic power might be:

- Open conflict with China combined with an increase in Chinese strategic programs.
- Renewed distrust of the USSR in Western Europe and an acceleration of NATO's strategic and theater nuclear programs.
- Better economic conditions than we currently project.
- Political and military leaders more skeptical than Brezhnev about Western and Chinese intentions and more assertive in foreign policy matters. ☐

The Soviet economy, in the aggregate, is large enough to support an expansion of strategic programs of this size.<sup>15</sup> The expansion would have a serious impact, however, on the structure of the economy and on the allocation of resources. It could increase the defense share of GNP to nearly one-fourth of the total by 1990, and before the end of the 1980s defense would be consuming almost all of the annual increment to GNP.

<sup>15</sup> The cost in dollar terms of the stepped-up strategic competition would be some 15 to 20 percent greater than that of the baseline projection. ☐

Such a change would probably cut sharply into investment, thus mortgaging future economic growth in order to achieve a short-term strategic gain. ☐

Consumption could also be affected, resulting in reductions in morale and productivity. This might require the Soviet leaders to increase coercion to keep the population under control. ☐

The Soviet defense industries probably have enough final assembly capacity to support the strategic buildup postulated in this alternative, but they could have difficulty in meeting production targets for components. Most of the increased production would be for missiles and aircraft. These systems for the most part do not compete directly with investment goods, although they do use metals and electronics that are in short supply in the civilian economy. If the buildup included an increase in submarine construction, however, this could reduce production of pipelines, drilling equipment, and pumps needed by the oil industry. ☐

The defense industries would also find it difficult to produce enough nuclear materials to supply the warheads in the larger postulated force. This many warheads would require nuclear materials exceeding our highest estimate of the amount that could be supplied by existing facilities. The Soviets could increase production somewhat by altering their processing techniques or by canceling contracts with foreign countries for use of Soviet enrichment plants. But to support a strategic force of the size postulated they probably would also have to build new facilities for processing nuclear materials. ☐

#### **Expansion of Conventional Forces**

**Effect on Military Capabilities.** If the Soviets were to increase defense spending in the 1980s at or near the rate of the early 1960s, and if they were to emphasize general purpose rather than strategic forces, they could by 1990 effect a substantial buildup in theater forces and an improvement in capabilities to project power in distant areas. They could, for example:

- Man and equip about 35 additional Ground Forces divisions.
- Add about 500 tactical interceptors and ground attack aircraft to support the larger ground forces.

- Double the production of long-range heavy transport aircraft over the number in our baseline projection, to some 125 (see page 92).
- Build enough large amphibious ships to more than double the capacity of their forces for combat lift of troops to distant areas.
- Increase production of large aircraft carriers to three or four units and provide the necessary escort ships.

These programs would permit the Soviets to maintain a continuous presence with aircraft carriers and amphibious forces in an area of critical importance such as the Eastern Mediterranean or the Persian Gulf, or to concentrate two or three carrier battle groups in a crisis. They would also give the Soviets the capability to move larger ground and air forces into peripheral countries more quickly than they could now. The Soviet airlift capabilities by 1990 would be comparable to those of US forces today.

**Causes and Consequences.** The economic and political conditions that could lead to a buildup emphasizing conventional forces are similar to those that could underlie an intensified strategic program—the coming to power of hardline leaders and a higher economic growth than we now project. In addition, the Soviets might undertake a major expansion of conventional and power projection forces:

- If conditions in Eastern Europe deteriorated until the Soviets no longer entrusted their Warsaw Pact allies with a major role in an East-West war.
- If there were a sharp downturn, bordering on open hostility, in Sino-Soviet relations.
- If the Third World, especially Southwest Asia and the Middle East, became so unstable as to threaten vital Soviet interests or to offer a clear opportunity for the Soviets to gain vital resources—or deny them to the West—by coercion.

Like the postulated strategic buildup described on page 96, a major expansion of general purpose forces would cost in dollar terms some 15 to 20 percent more than our baseline projection. The Soviet economy as a whole could support this kind of buildup, as it could the

strategic, but the political consequences of this reallocation of resources could be more serious.

The impact of an increase in general purpose programs on investment growth and on critical sectors of the economy probably would be more severe than the impact of an expansion of strategic forces:

- It would take more men. General purpose forces (especially ground forces) use much more manpower than strategic forces do, and this kind of buildup would exacerbate the labor problems that the Soviets will face in the 1980s.
- It would take more energy and raw materials. Production of ships and land armaments (the bulk of the increase in this alternative projection) consumes more energy and metal and uses more machinery per unit of output than does production of aircraft and missiles (the bulk of the increase in the projection that emphasizes strategic forces).
- It would take up a different—and more critical—kind of production capacity. The Soviets produce both tanks and railcars, both armored vehicles and agricultural machinery, and both military and civilian trucks in the same plants. An increase in military production at one of these plants would reduce the output for transportation and agriculture.
- It would demand more construction. Construction of a large number of new ground and air force facilities would divert labor, machinery, and materials from civilian uses. These are needed to reduce the already growing backlog of unfinished construction projects in the Soviet economy and to build the new facilities and infrastructure needed to exploit natural resources in undeveloped areas.

With the cumulative effect of these more serious sectoral impacts, a stepped-up conventional competition probably would mean a greater reduction in the growth of GNP and in the availability of resources for investment and consumption than would a stepped-up strategic competition.

A further reduction in railcar production, for example, could disrupt the Soviets' already over-burdened transportation network, causing delays, bottlenecks, and

dislocations throughout the economy. The inability to turn out more tractors and harvesters could threaten the political leaders' programs to increase food production and cause serious shortages—possibly requiring highly repressive measures to contain consumer unrest. The implication of this analysis is that the Soviets might be able to handle an increased strategic arms competition more easily than an intensified buildup of conventional forces. ☐

#### **A Reduced Military Effort**

We have also examined the effect of absolute reductions in military spending like those the Soviets made under Khrushchev in the late 1950s. There is no evidence that the leaders are considering such an option. Nevertheless, we have attempted to identify the military programs that they might alter if domestic political turmoil in the 1980s compelled them to reduce their resource commitment to defense. ☐

Our assessment is necessarily speculative, because there is no direct evidence on possible Soviet choices. But historical precedents, as well as our understanding of Soviet military priorities and of the economic trade-offs between civilian and military programs, provide some insights. ☐

**Effect on Military Capabilities.** We believe that the Soviets would prefer to negotiate for mutual cuts with Western nations rather than to cut any of their own forces unilaterally. We also believe they would distribute any cuts among all of the military services, as they did in the 1950s, for two major reasons:

- This would minimize political wrangling.
- It is also required by doctrine, in which the services have complementary roles in an overall strategy, so that expansion or contraction of one entails a similar change in the others. We judge that they would attempt to preserve the key programs for each service and to make the smallest cuts in those programs that are intended to remedy major weaknesses.

Finally, we would expect Soviet leaders to cut in ways that would benefit the economy. They would depend on the key organizations in the Soviet decisionmaking structure—the VPK, Gosplan, the General Staff, and

the Central Committee—for assistance in making these trade-offs. ☐

The choices would not be easy, however. Unlike the marginal alterations in defense spending discussed in the baseline projection (page 94), an absolute reduction in defense spending probably would require actual reductions in men and equipment in some military services and threaten programs of great importance to each. For example, the Soviets might have to cut back sharply or eliminate several of the following programs:

- The intercontinental attack bombers of Long Range Aviation.
- One or more of the new interceptor aircraft for the strategic defense forces.
- Some of the Navy's large surface combatants.
- New fighter-bombers for Frontal Aviation.
- Some of the new or improved light and medium ICBMs.
- New artillery and air defense weapons for the Ground Forces.

Cuts this deep would be hard to make within the framework of the current doctrine and mission structure of the armed forces. They would probably require a redefinition of Soviet military goals and changes in the roles and missions of some of the military services. ☐

Such changes could only be arrived at after institutional conflict and political infighting, whose outcome we cannot predict with confidence. There would be a net reduction in expenditures for all of the services, but we cannot forecast exactly what missions and programs would suffer most. It would appear most logical, however, for the Soviets to concentrate the reductions in general purpose forces—especially the Ground Forces. This is because:

- The Soviets probably are more comfortable with their military position (against the West and China) in general purpose than in strategic forces; in particular, they probably consider themselves ahead in the number and quality of their Ground Forces weapon systems.
- Reductions in general purpose forces could return more people to the work force.

- The production resources now devoted to general purpose forces can be transferred to critical civilian needs more readily than can those now used for strategic forces.

Finally, the last time the Soviets reduced defense spending, they cut back on conventional forces and tried (unsuccessfully) to substitute a concept of deterrence through strategic nuclear power. ☐

**Causes and Consequences.** We consider an absolute reduction in military spending unlikely (as we do the two kinds of buildup). Under some circumstances, however, the Soviets might feel impelled in that direction. These include:

- Economic conditions poorer than those we currently project—for example, a series of disastrous harvests causing an actual reduction in economic output.
- The spread of popular unrest from Eastern Europe to the USSR, coupled with the rise to power of political figures sympathetic to the consumers' plight.
- A Sino-Soviet rapprochement, a general lessening of tensions with the West, and a move by West European countries closer to the Soviet orbit and away from US influence. ☐

An absolute reduction in the level of military spending in the 1980s of 2 percent a year would imply a total cost of about \$1.5 trillion (1979 prices) for the 1981-90 period—about 25 percent less than the cost of the baseline projection. This reduction might increase only slightly the overall growth of the Soviet economy. But all of the growth could be directed to civilian uses—the growth of investment could increase on the order of 2 percentage points and that of per capita consumption could be up nearly a full point. ☐

The most important result of a reduction, however, would be that the Soviet Union could step up the production of machine tools and the equipment needed for transportation, energy, and agriculture. This would occur particularly if the reduction were concentrated in general purpose forces. ☐

### Clues to Future Soviet Policies

If the Soviets continue their military programs as they have begun, Soviet military power will develop in the 1980s as described in our baseline projection. If they change the military programs in one of the three ways discussed in our alternative projections, we would expect to receive evidence from intelligence sources that would alert us to the change. ☐

The paragraphs below discuss some of the indicators—political, economic, and military—that we might see if the Soviets changed their plans. Some are fairly clear in their implications, but many (especially those of a political or economic nature) are ambiguous. We have listed the indicators according to our judgment about the direction in which they most probably point. But no single clue would be adequate to identify a policy shift. We would have to detect at least several indicators, and evaluate them over a year or more, before we could be confident of identifying an actual change. ☐

### Suggestions of a Stepped-Up Effort

**Political.** The evidence we might obtain about the political environment that might signal an accelerated military effort could include:

- Reliable reporting of a Soviet perception that relations with the West or with China (or both) were likely to deteriorate sharply.
- The accession to leadership of relatively hardline Soviet politicians and the emergence of a political consensus favoring even greater emphasis on defense. (We could ascertain this by monitoring the leaders' statements and reports from human sources.)
- A hardening of Soviet positions in arms control negotiations, such as persisting in clearly nonnegotiable demands or threatening to break off discussions or to abrogate existing agreements.
- Indications of an increase in domestic political repression. ☐

**Economic.** General economic evidence that might be related to an increase in military spending could be:

- More optimistic official forecasts of economic performance.
- Publication of plan targets for investment and consumption that are measurably lower than we currently expect.
- A more rapid increase in capital construction at defense plants and a slowdown at civilian industrial facilities.
- Increased secrecy about economic data that could be analyzed to reveal general trends in the defense effort.
- Greater concentration of investment funds on heavy industry. ☐

In addition, there are more specific economic data that, if available, could suggest the direction of the increased military effort:

- Construction of new facilities for production of nuclear material and abrogation of agreements to process materials for foreign countries could portend an increase in strategic programs.
- Reduced production of merchant ships, civilian aircraft, railcars, and agricultural machinery would suggest that additional resources were being devoted to general purpose forces. ☐

**Military.** Specific evidence probably would also be available on military programs. Signs of an increased defense effort could include:

- A sharp increase in weapon testing activity. (The types of weapons being tested could suggest the direction of the effort.)
- Increases in production rates for major weapons. (These probably would be detected only after the items produced began to appear in military units.)
- The formation of new military units.
- Discussion, or testing in exercises, of new ways of employing various forces.
- The callup of reservists, an increase in annual conscription rates, and changes in policy on deferments. ☐

#### Suggestions of a Reduced Effort

**Political.** Political evidence of a reduced military effort could include:

- Reporting of greater optimism in the Kremlin on the prospects for detente.
- The accession to leadership of political figures inclined to support civilian economic activity—perhaps even at the expense of the military.
- The admission of additional civilian participants to the defense decisionmaking process.
- A more flexible Soviet stance on arms control; in particular, movement on MBFR could signal a desire to improve economic performance by reducing expenditures on theater forces.
- Signs of greater tolerance for experimentation in economic management and more sympathy for consumer complaints. ☐

**Economic.** Economic information that might reflect a reduced defense program could include:

- Pessimistic Soviet forecasts of economic growth.
- Energy shortages developing early in the 1980s.
- Major shifts in plan targets toward increased investment or consumption at the expense of defense programs.
- Reduction or halting of construction activity at defense plants.
- Sharp increases, actual or planned, in the output of civilian transportation or agricultural equipment. ☐

**Military.** If the military effort were being cut back, we might also see:

- Cuts in weapon testing levels and production rates.
- Dissolution of military units and reorganization or consolidation of forces.
- Releases of men from active duty and reduced draft calls.
- Evidence of debates on the roles and missions of the military services and on the nature of a future war and the goals of military strategy. (Such a debate is now almost entirely absent from Soviet writings.) ☐

The research that led to this assessment was coordinated by an NFAC Working Group. The members of the Group were:

*Office of Economic Research*

*Office of Imagery Analysis*

*Office of Political Analysis*

*Office of Scientific and Weapons Research*

*Office of Strategic Research*

Contributions to this assessment were also provided by analysts in the Offices of Central Reference, Economic Research, Political Analysis, Research and Development, Training and Education, Scientific and Weapons Research, and Strategic Research and

This assessment was reviewed by members of the DCI's Military-Economic Advisory Panel.

## Appendix A

### Selected NFAC Publications Related to Soviet Military Forces and Policies in the 1980s

Some of the studies on which this assessment was based are noted below. The listing includes only studies classified Secret or below. A list of the principal studies of higher classification that were used in the preparation of this assessment is available to appropriately cleared recipients on request. ☐

*Soviet Economic Problems and Prospects*, ER 77-10436 (Unclassified)

*Some Implications of Demographic Trends for Economic Policies*, ER 77-10012 (Unclassified)

*SOVSIM: A Model of the Soviet Economy*, ER 79-10001 (Unclassified)

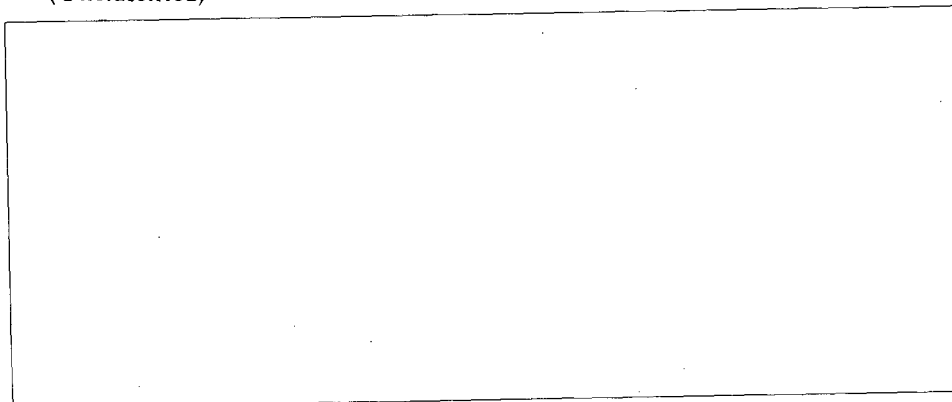
*Simulations of Soviet Growth Options to 1985*, ER 79-10131 (Unclassified)

*Soviet Military Theory: Structure and Significance*, SR 79-10138X (Secret NOFORN-NOCONTRACT-ORCON)

*Soviet Spending for Defense: Trends Since 1965 and the Outlook for the 1980s*, SR 79-10147 (Secret)

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*The Soviet Economy in 1978-79 and Prospects for 1980*, ER 80-10328  
(Unclassified)

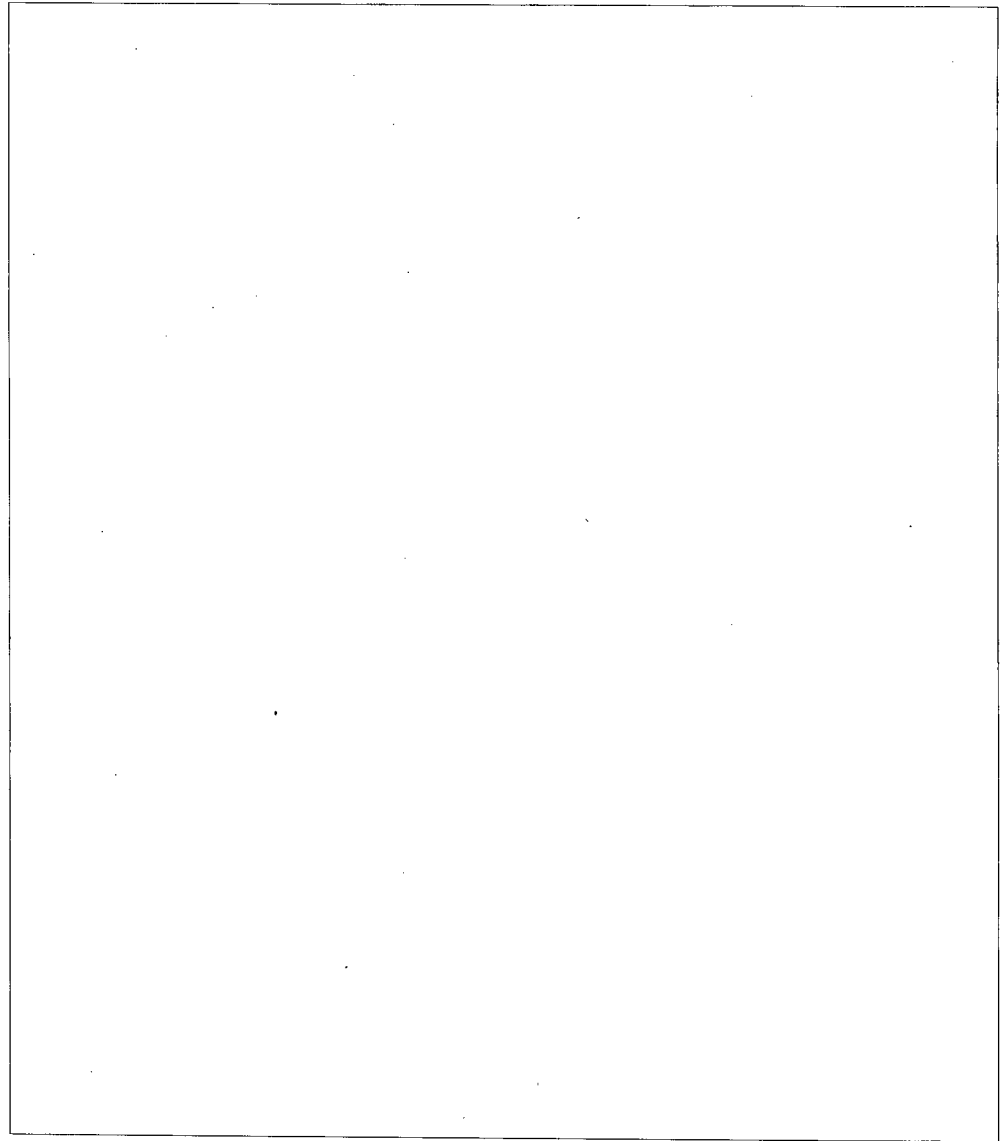


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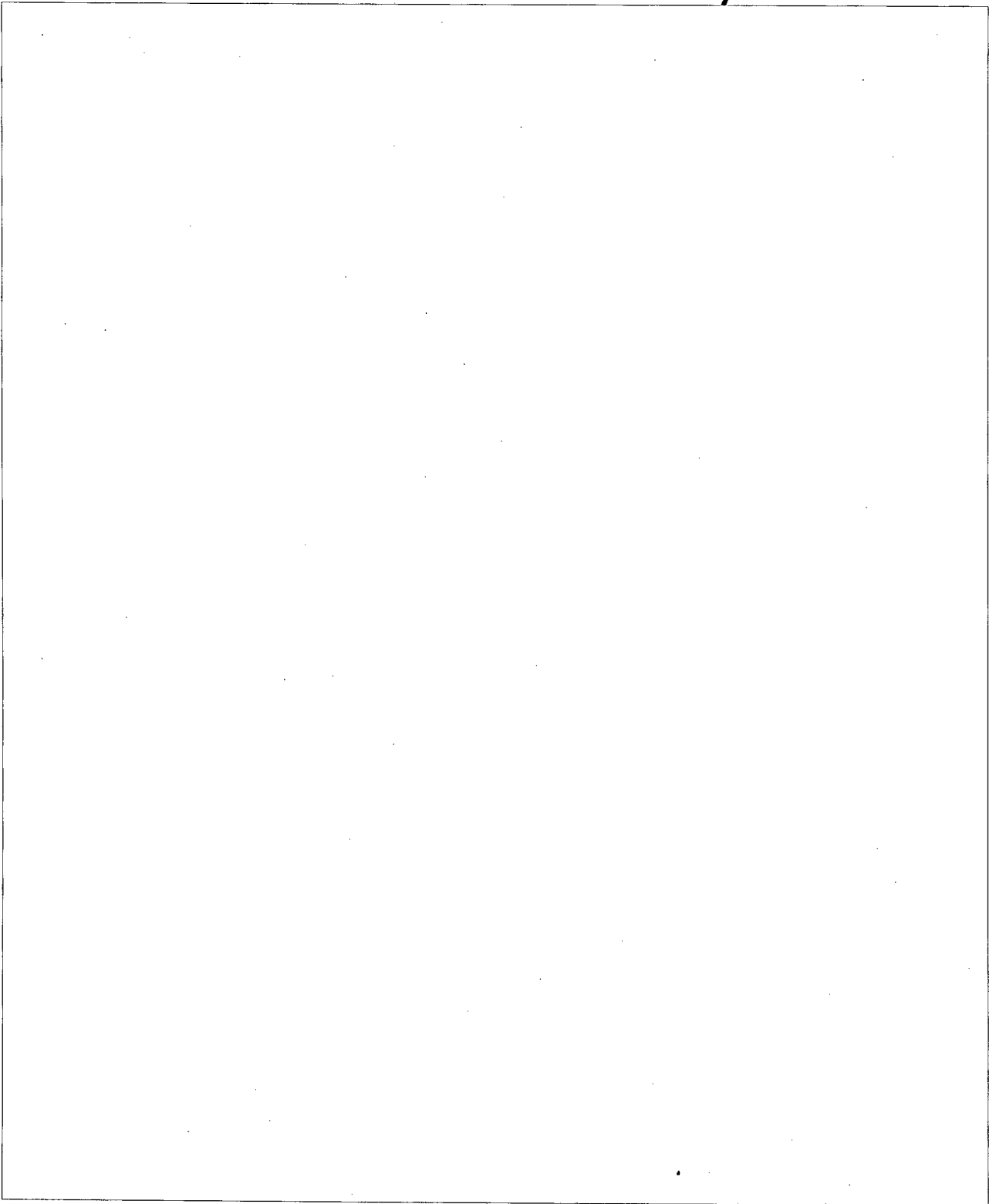
## Appendix B



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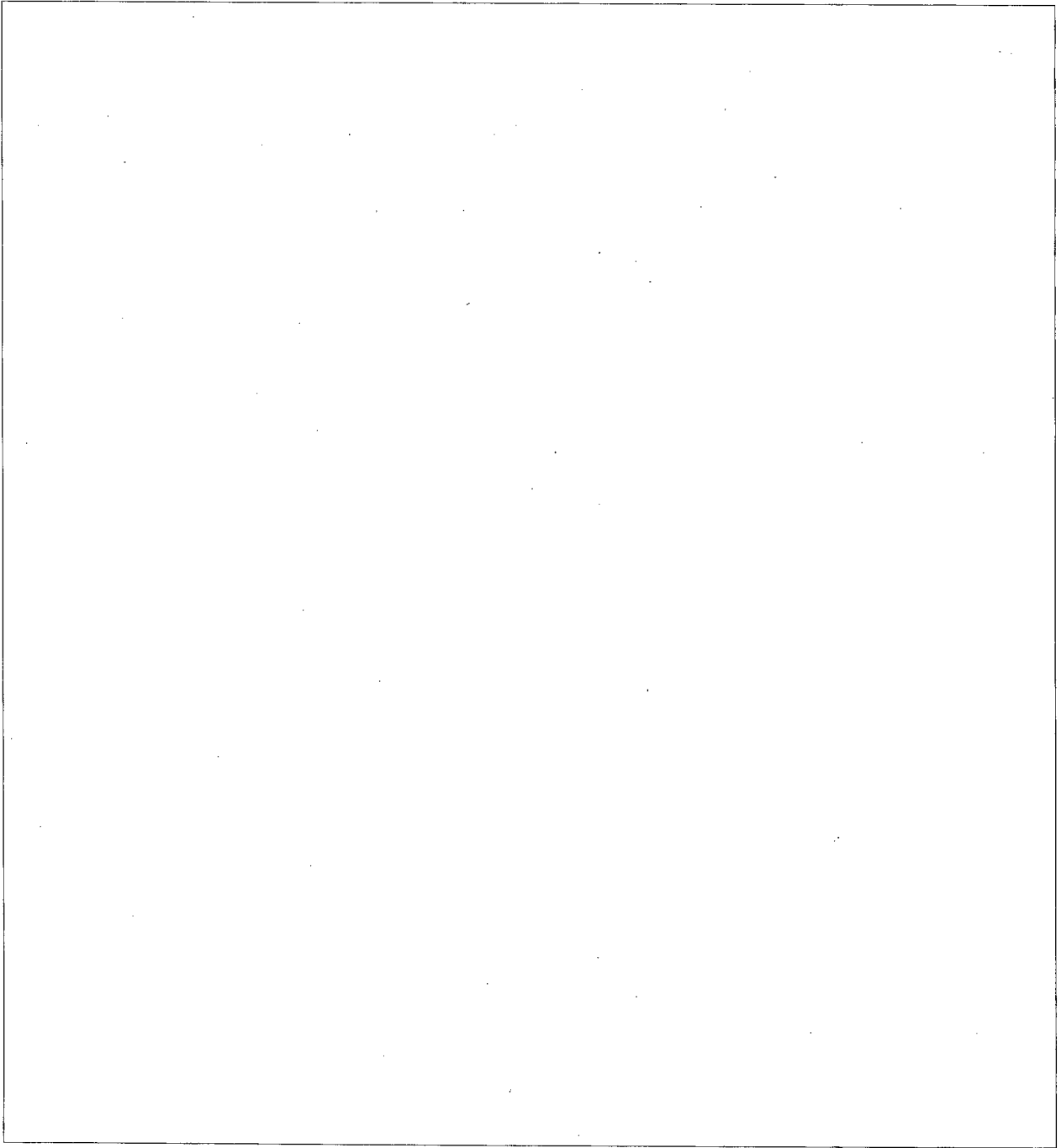
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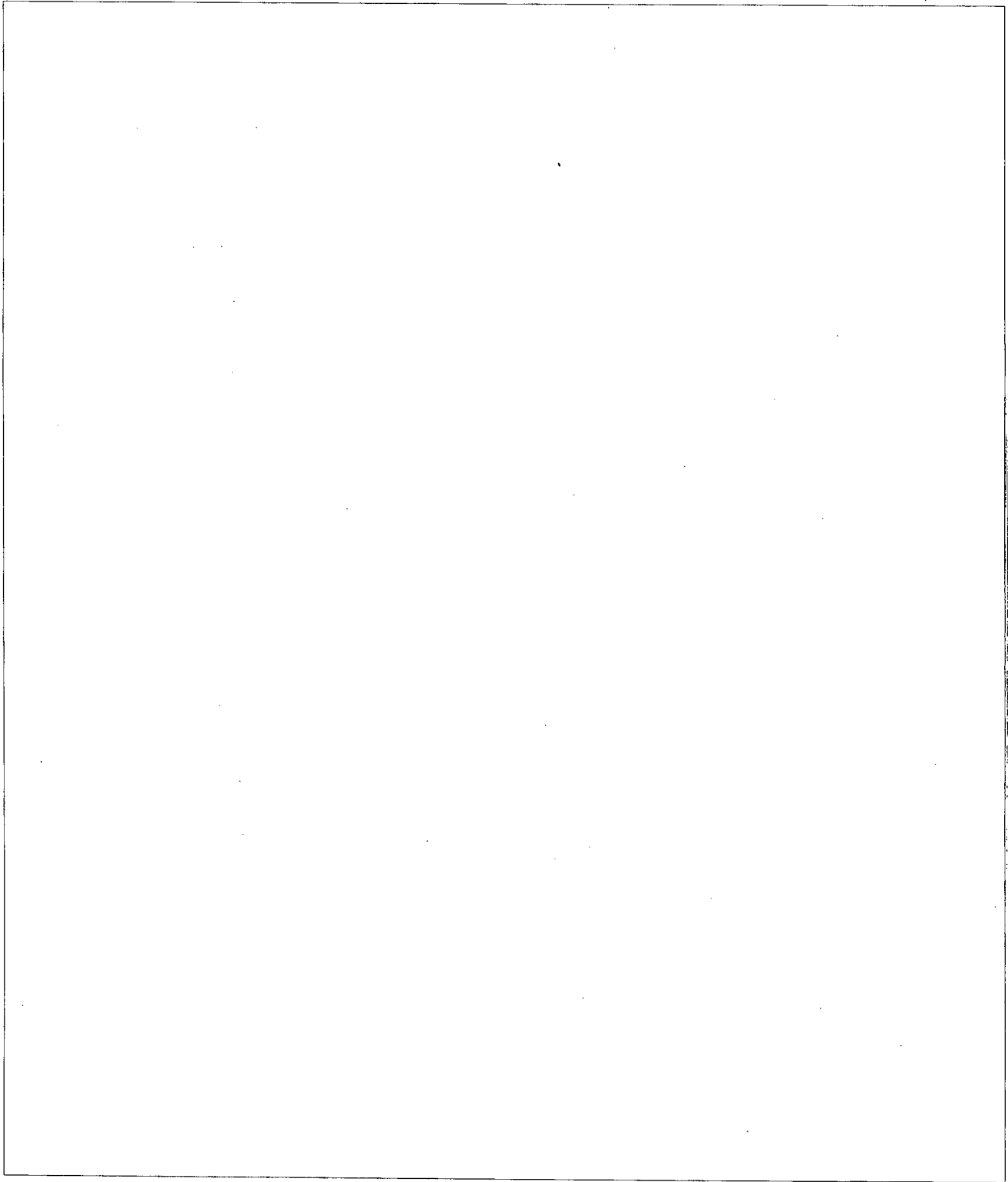
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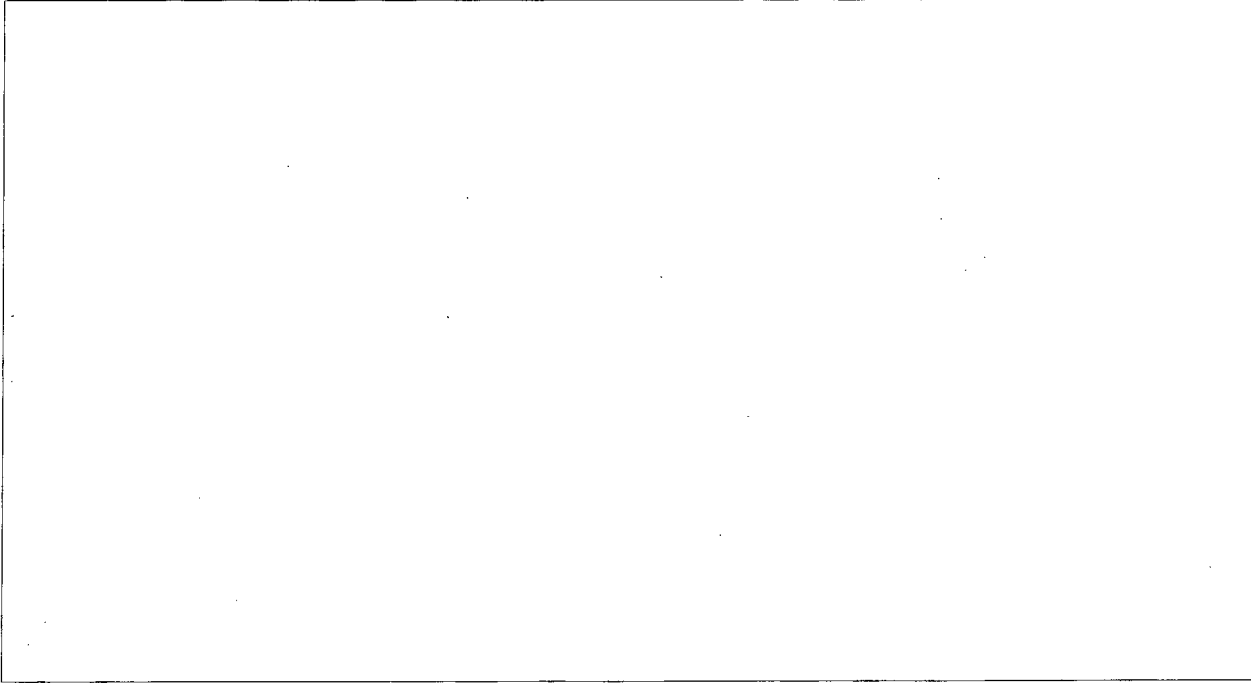
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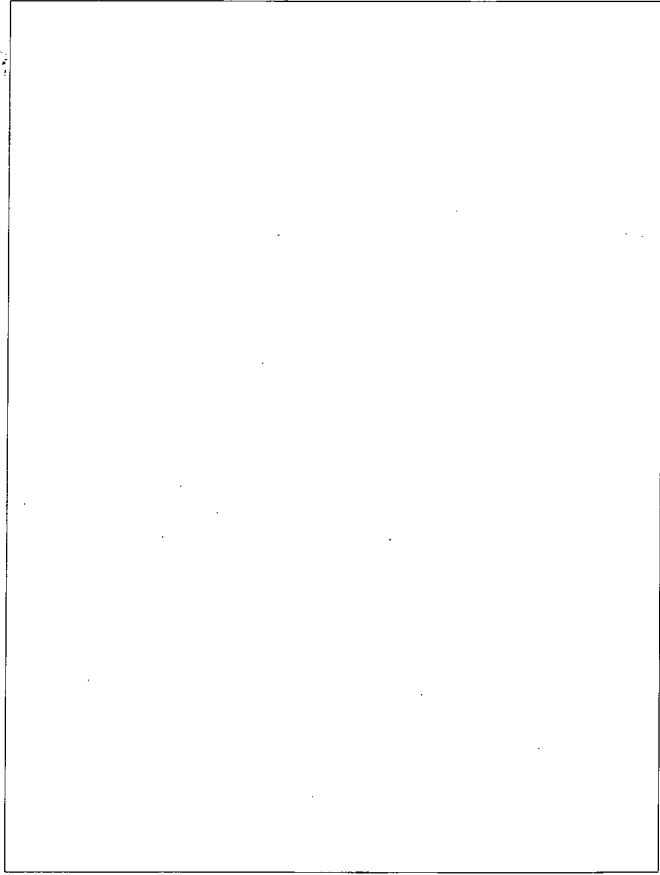
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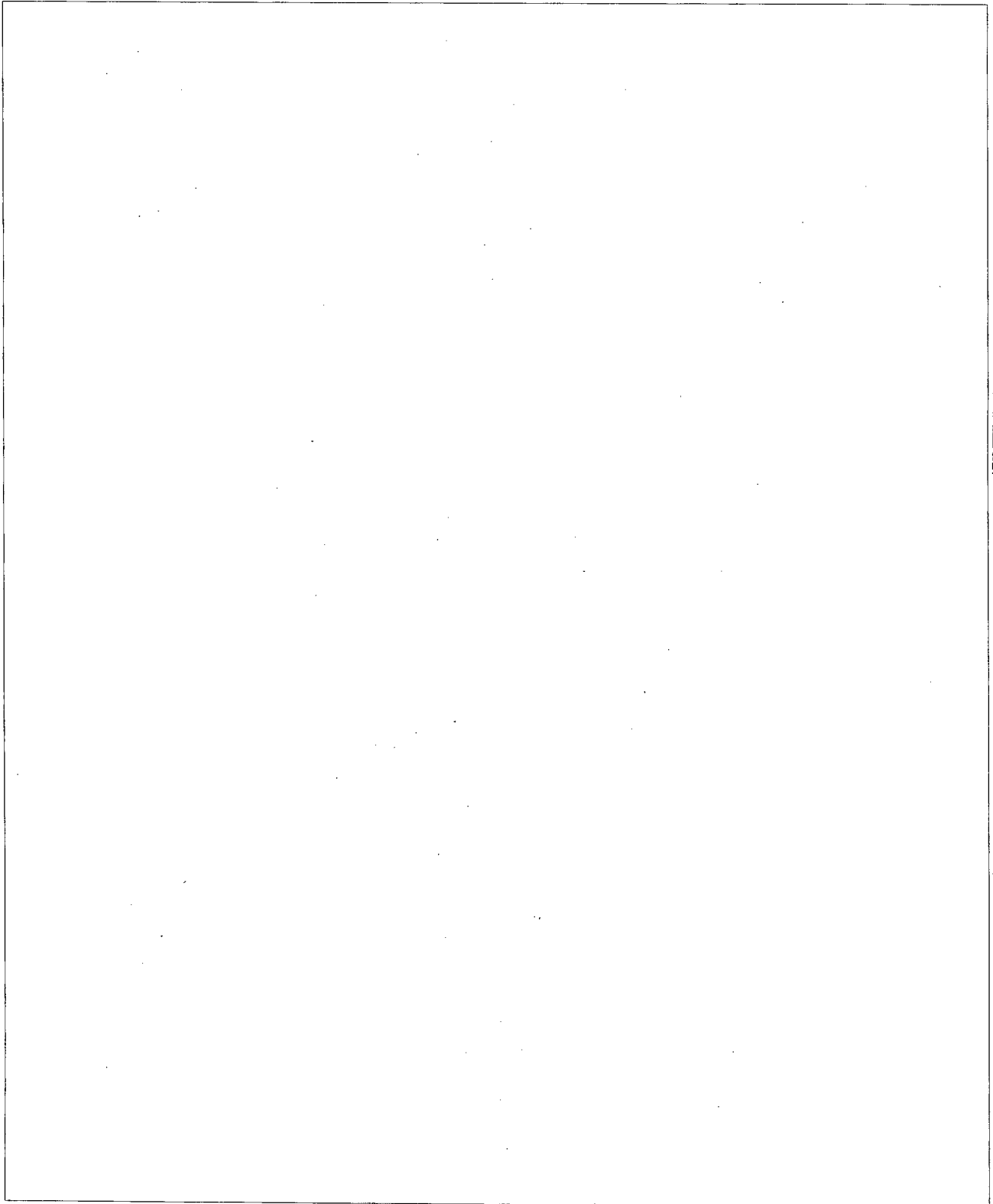
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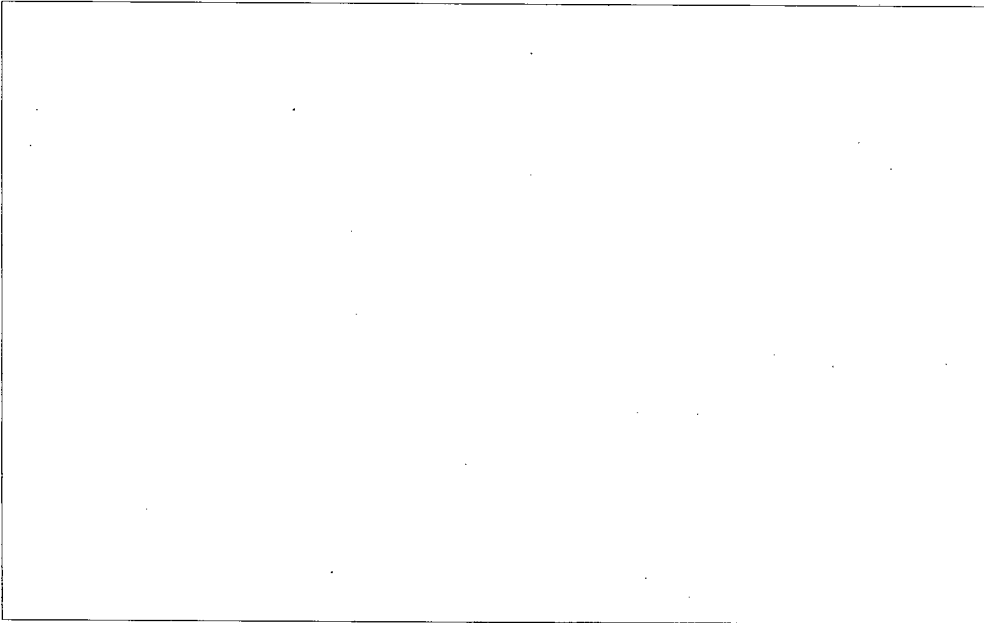
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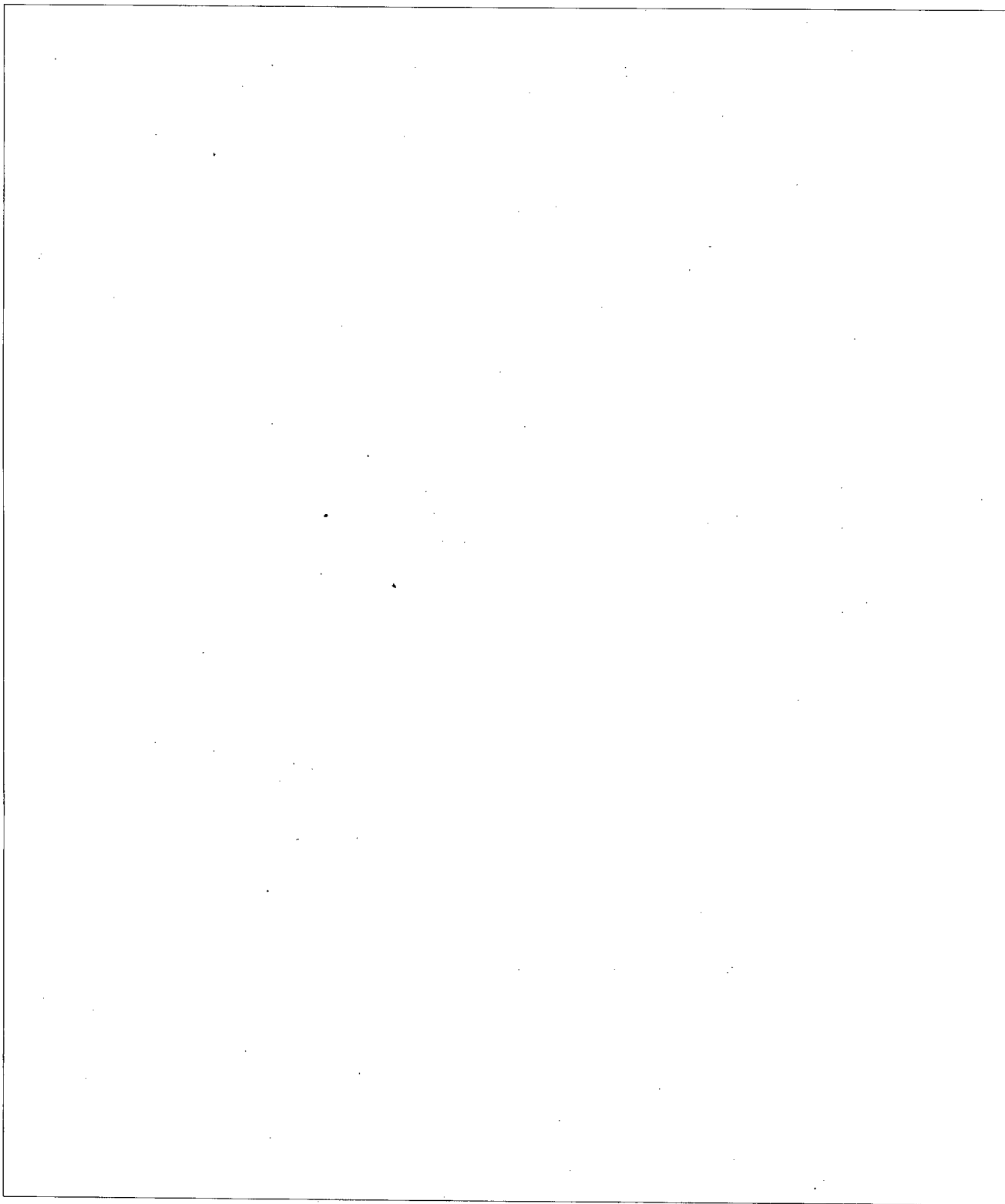
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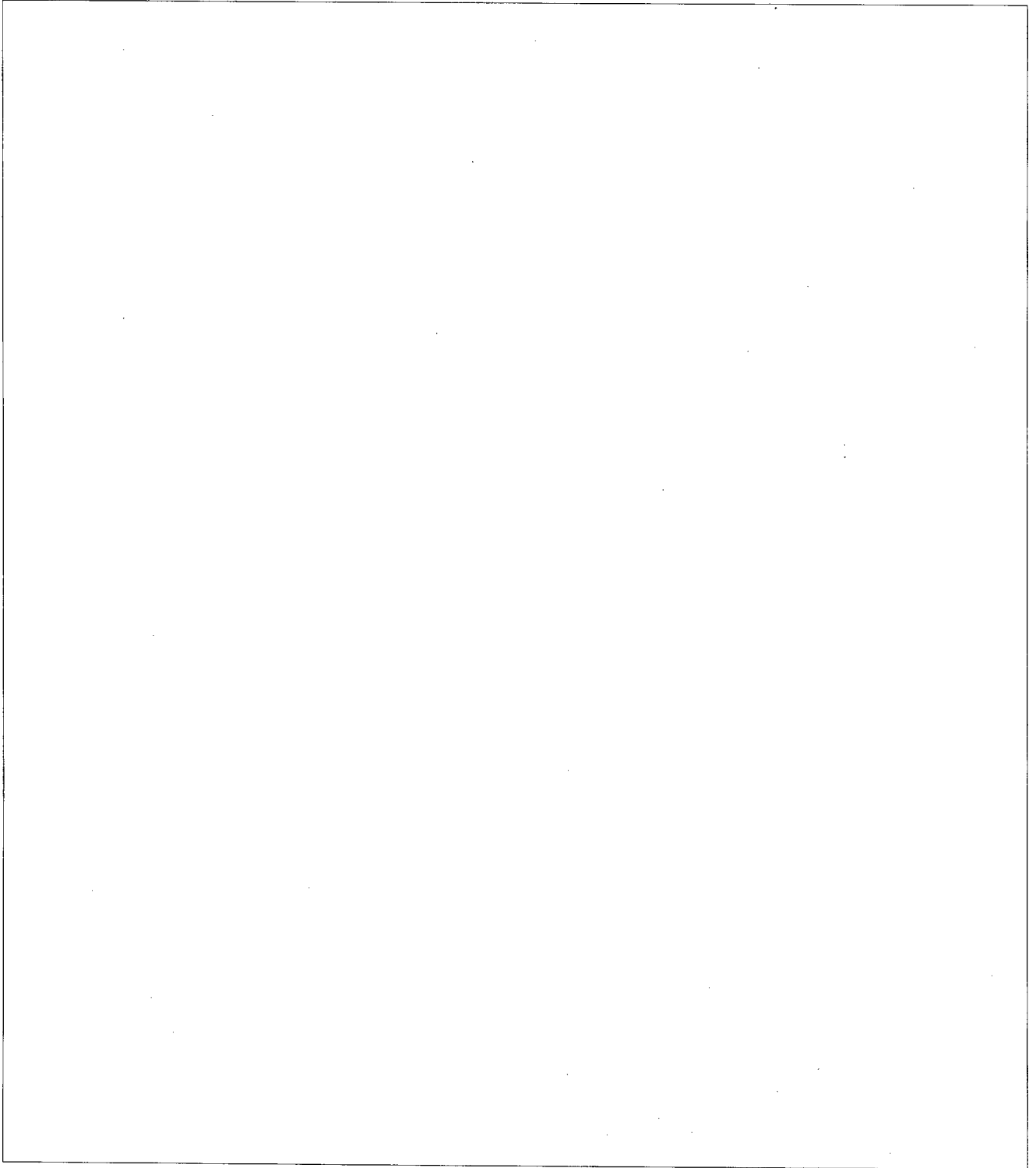
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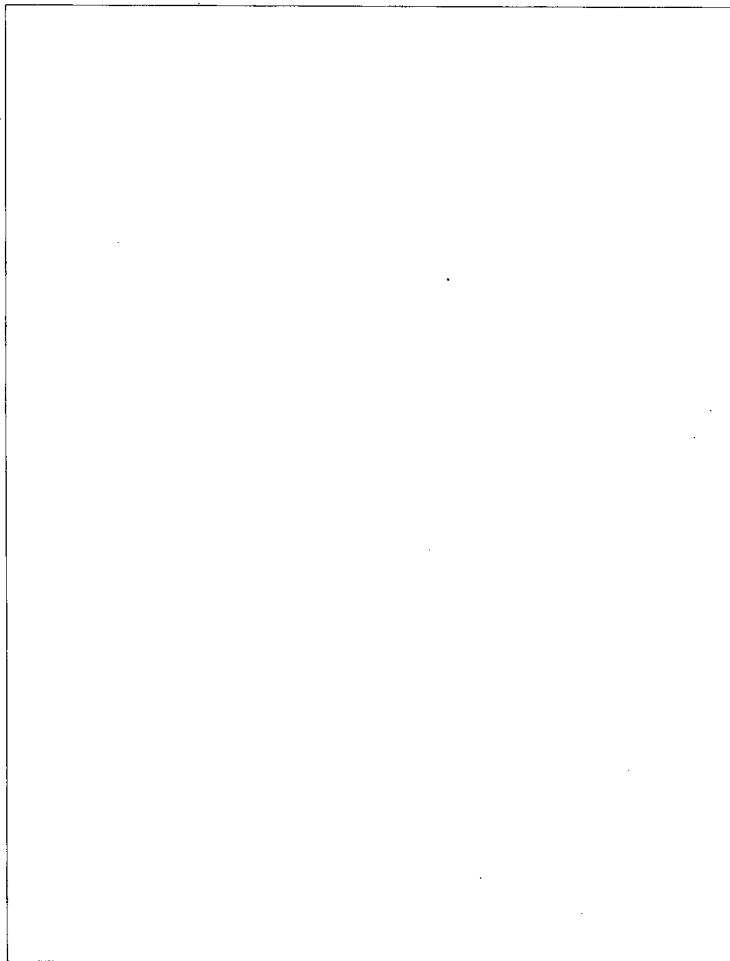
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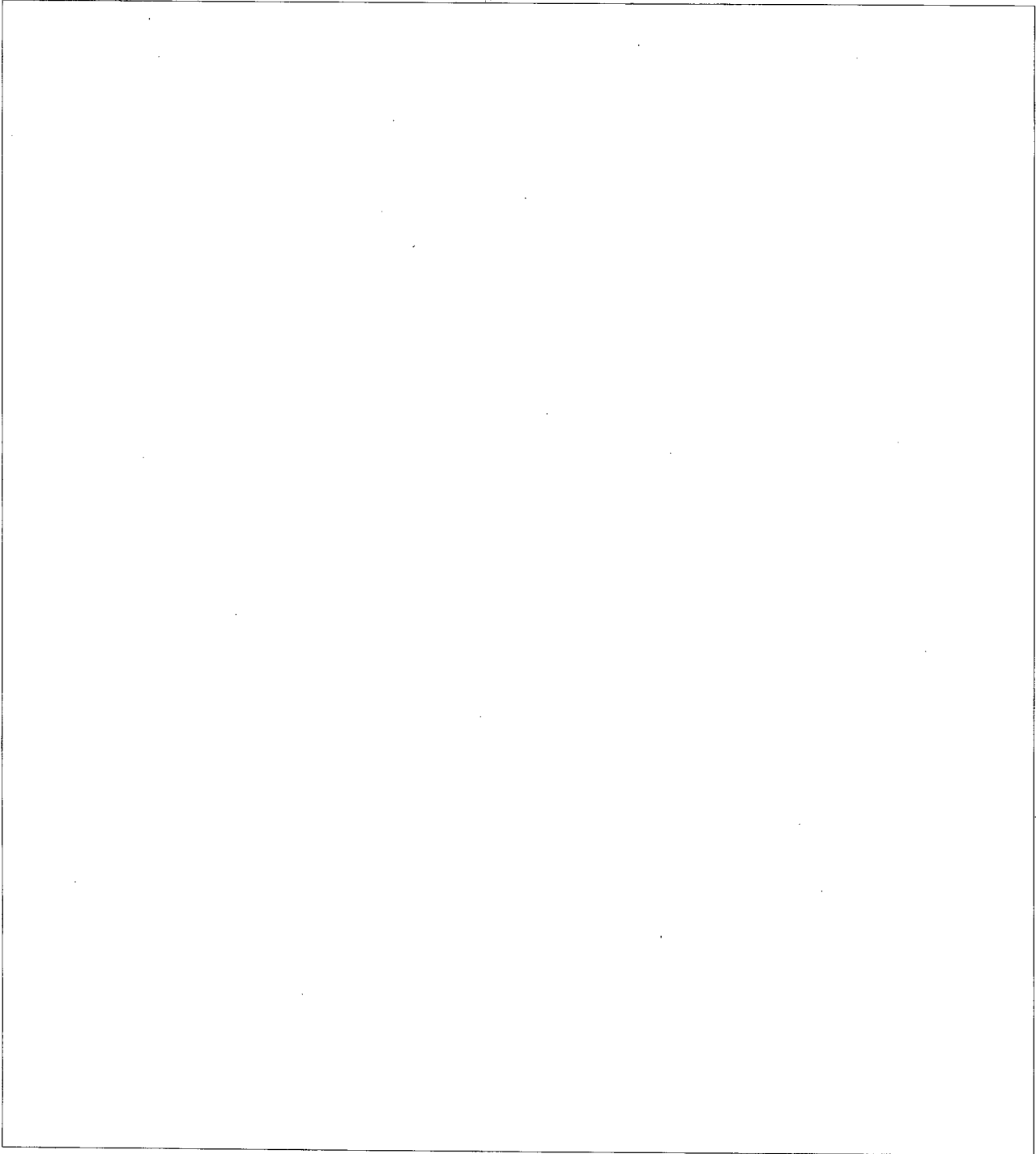


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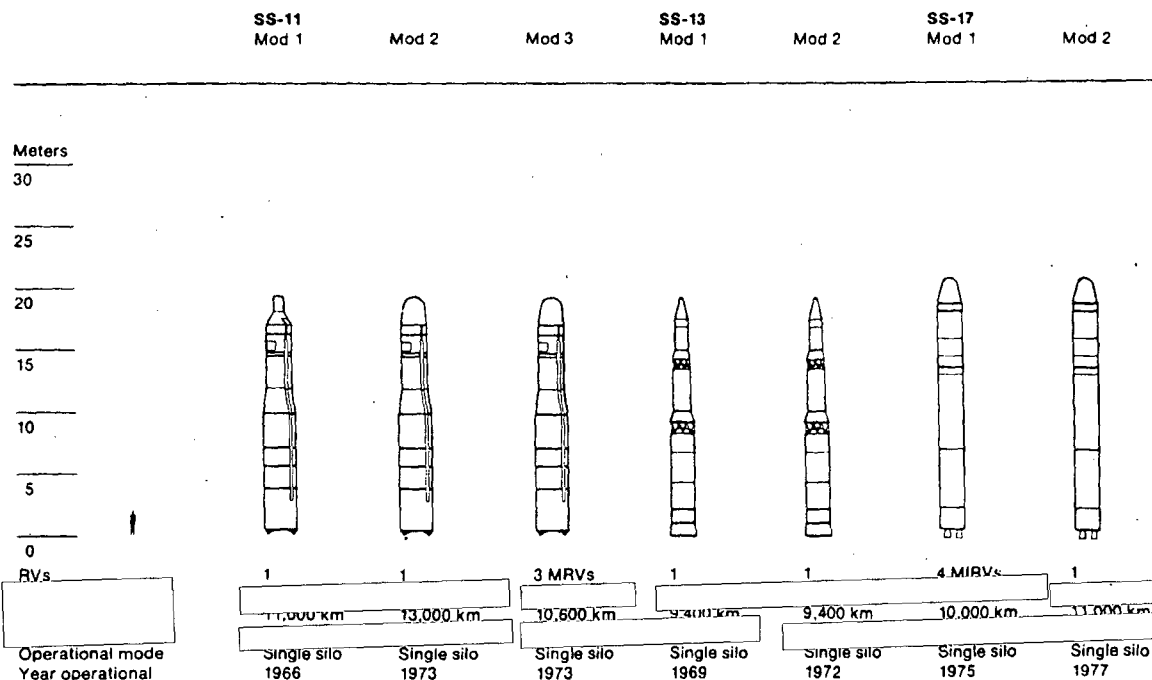
## Appendix C

### Characteristics of Selected Soviet Weapons

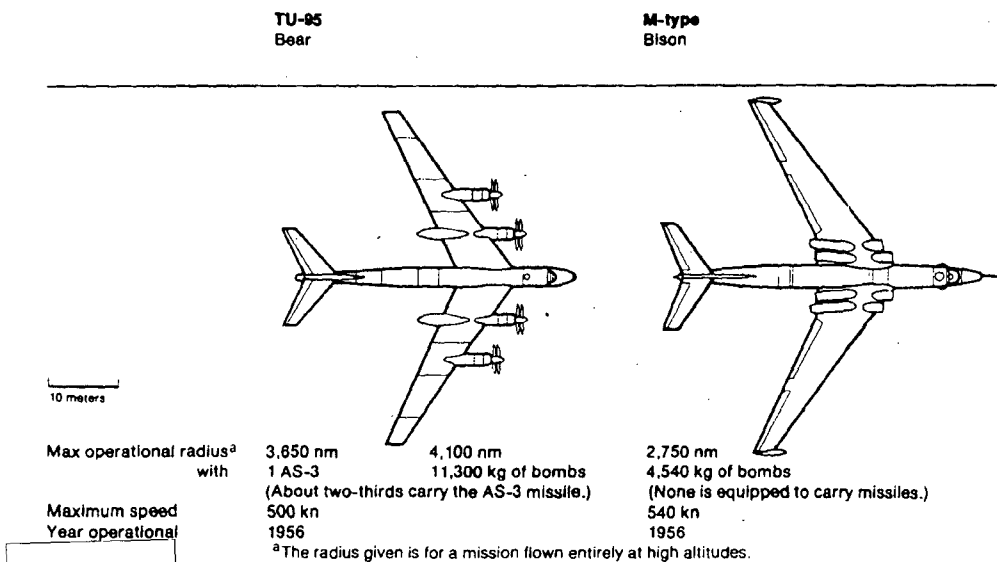
This appendix contains line drawings of the principal Soviet weapon systems mentioned in the report and tables showing their most important technical characteristics. The estimated characteristics are based on all available sources of intelligence and, except as noted, are agreed Intelligence Community figures

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## Characteristics of Current Soviet ICBMs



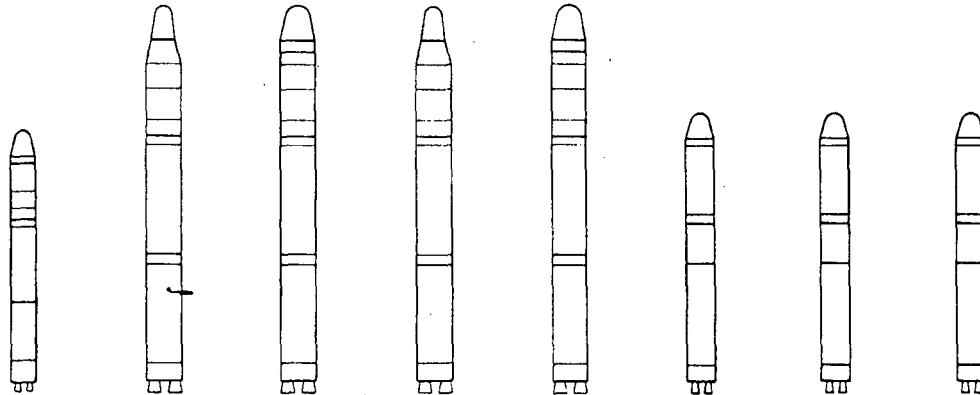
## Characteristics of Soviet Long-Range Bombers



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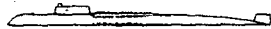

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Mod 3      SS-18 Mod 1      Mod 2      Mod 3      Mod 4      SS-19 Mod 1      Mod 2      Mod 3

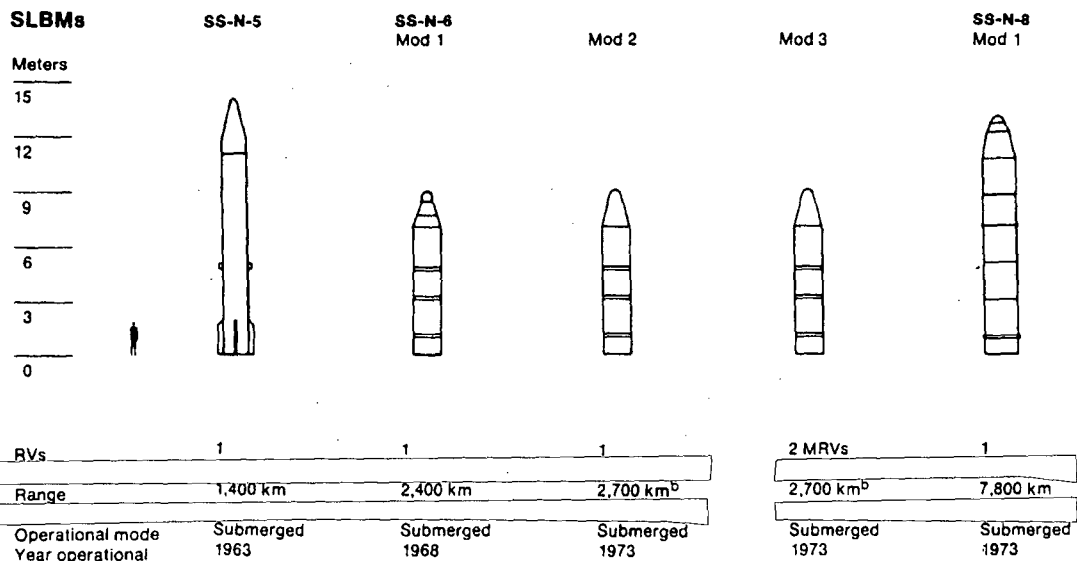


4 MIRVs	1	8 or 10 MIRVs	1	10 MIRVs	6 MIRVs	1	6 MIRVs
10,000 km	13,500 km	12,000 km	17,500 km	9,800 km	9,600 km	10,300 km	9,600 km
Single silo 1979	Single silo 1974	Single silo 1976	Single silo 1976	Single silo 1979	Single silo 1975	Single silo 1977	Single silo 1979

## Characteristics of Soviet Submarines and Submarine-Launched Ballistic Missiles

SSBs and SSBNs	Missiles	Propulsion	Year Operational
G-II 	3 SS-N-5s <sup>a</sup>	Diesel	1962
H-II 	3 SS-N-5s <sup>a</sup>	Nuclear	1963
Y-I 	16 SS-N-6s	Nuclear	1968
Y-II 	12 SS-NX-17s	Nuclear	?




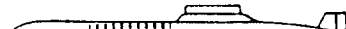
### SLBMs



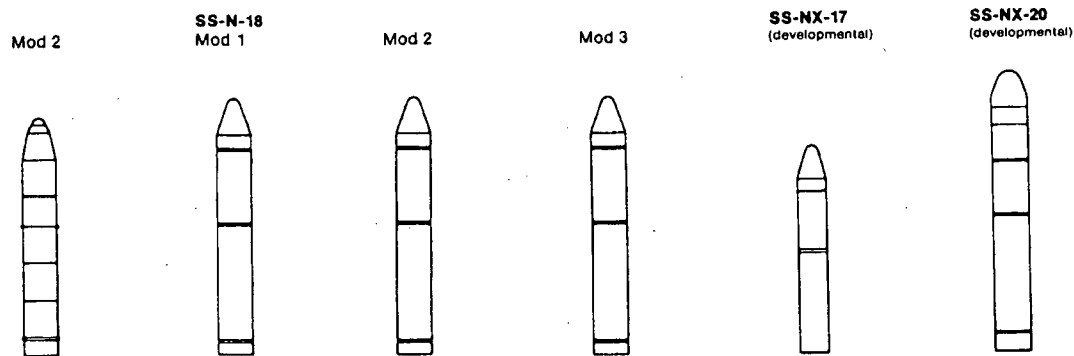
<sup>a</sup>One G-class has been modified to carry four SS-N-6s; one G-class and one H-class have been modified to carry six SS-N-8s; and one G-class has been modified to carry one SS-NX-20.

<sup>b</sup>Some range estimates for these systems are about 300 kilometers greater. In addition, the Soviets have used the postboost vehicles of the SS-N-18 Mod 1 and Mod 2 to increase the ranges to 7,500 and 9,100 kilometers, respectively.

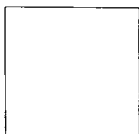
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		Missiles	Propulsion	Year Operational
D-I		12 SS-N-8s	Nuclear	1973
D-II		16 SS-N-8s	Nuclear	1975
D-III		16 SS-N-18s	Nuclear	1978
Typhoon (developmental)		20 SS-NX-20s	Nuclear	?

50 meters



1	3 MIRVs	1	7 MIRVs	1	?
9,000 km	6,500 km	7,650 km <sup>b</sup>	6,250 km <sup>b</sup>	3,900 km	8-9,000 km
Submerged 1977	Submerged 1978	Submerged 1978	Submerged 1978	Submerged ?	Submerged 1984 ?

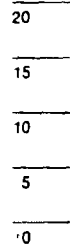


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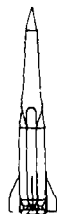
## Characteristics of Soviet Strategic Defense Systems

### ABMs

Meters



**ABM-1b**  
Galosh

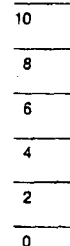


Intercept range  
Effective altitude  
Minimum  
Maximum  
Year operational

500 km  
31.5 km  
400 km  
1968

### SAMs

Meters



**SA-1**  
Guild



**SA-2**  
Guideline



**SA-3**  
Goa



Range at maximum altitude  
Effective altitude  
Minimum  
Maximum  
Year operational

33-48 km  
1,070 m  
18,300 m  
1954

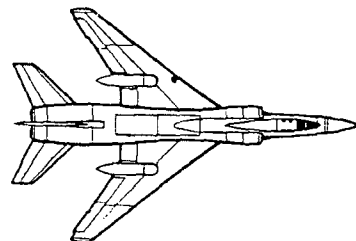
50 km  
150-300 m  
27,500 m  
1958

22-26 km  
45 m  
18,300 m  
1961

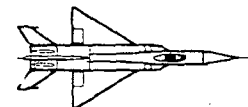
### Interceptors

Newer Models

**TU-128**  
Fiddler  
Medium-to-high altitude



**SU-15**  
Flagon  
Medium-to-high altitude



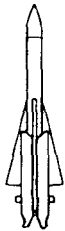
Max operational radius<sup>a</sup>  
with  
Maximum speed  
Year operational

600 nm  
4 AAMs  
950 kn  
1966

250 nm  
2 or 4 AAMs and cannon  
1,050 kn  
1967

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**SA-5**  
Gammon



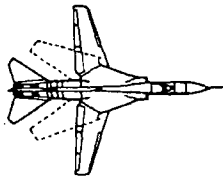
278 km  
300 m  
30,500 m  
1967

**SA-10**



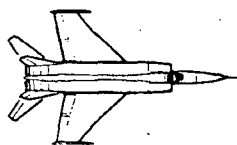
100 km  
50 m  
28,000 m  
1980

**MIG-23**  
Flogger  
Low-to-medium altitude



365 nm  
4 AAMs and cannon  
1,300 kn  
1972

**MIG-25**  
Foxbat  
High altitude



270 nm  
4 AAMs  
1,625 kn  
1970

10 meters

<sup>a</sup> The radius given is for a mission flown entirely at medium-to-high altitudes.

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### Characteristics of Major Soviet Ground Forces Weapons

#### Principal Medium Tanks

	Main Armament	Aarmor	Weight	Year Operational
--	---------------	--------	--------	------------------

T-54/55

100-mm gun

Steel

36 metric tons

1949/58



T-62

115-mm  
smoothbore gun

Steel

37 metric tons

1961



T-64

125-mm  
smoothbore gun

Laminate

38 metric tons

1970



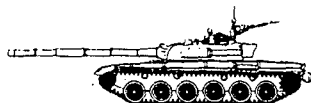
T-72

125-mm  
smoothbore gun

Laminate

41 metric tons

1974



T-80

125-mm  
smoothbore gun

Laminate

45 metric tons

1981



2 meters

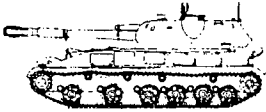
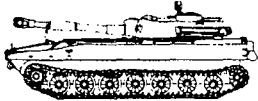
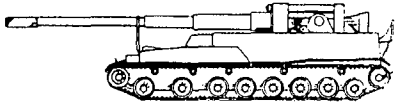
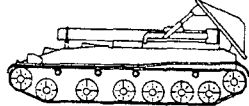
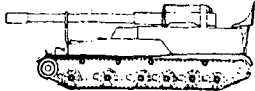
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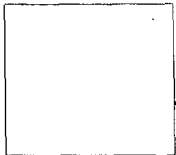


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(continued)

**Self-Propelled Artillery**

		Main Armament	Maximum Range	Year Operational
M-1973		152-mm howitzer	17,300 m	1973
M-1974		122-mm howitzer	15,300 m	1974
M-1975		203-mm gun (nuclear capable)	28,000-30,000 m	1977
M-1977		240-mm mortar (nuclear capable)	9,600-12,000 m	1977
M-1977		Gun-howitzer (probably nuclear capable)	?	?

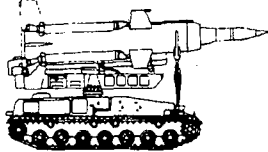
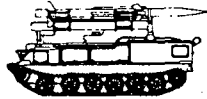



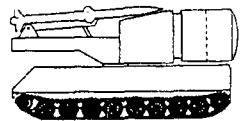
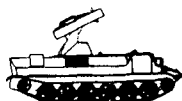


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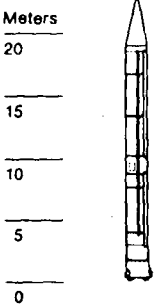
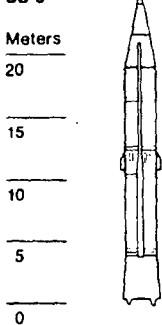
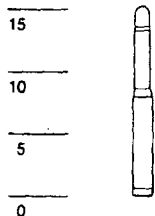
(continued)

**Tactical Mobile SAMs**

	Range		Altitude		Guidance	Rails per Launcher	Year Operational
	Minimum	Maximum	Minimum	Maximum			
SA-4 	10 km	*	100 m	20,000 m	Semiactive radar	2	1967
* There is disagreement in the Intelligence Community over whether the maximum range of the SA-4 is 50 or 80 km.							
SA-6 	4 km	25 km	50 m	13,000 m	Semiactive radar	3	1970
SA-7 	1.5 km	5 km	15 m	2,300 m	Infrared seeker	1	1967
SA-8 	2 km	12 km	50 m	10,000 m	Semiactive radar	4 or 6	1974
SA-9 	1.5 km	6 km	15 m	3,600 m	Infrared seeker	4	1968
SA-11 	2-4 km	30 km	25 m	19,000 m	Semiactive radar	3 or 4	1981
SA-13 	1 km	6 km	15 m	3,600 m	Infrared seeker	4	1977

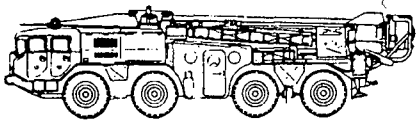
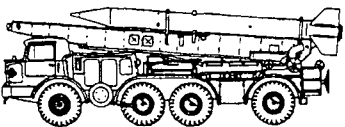
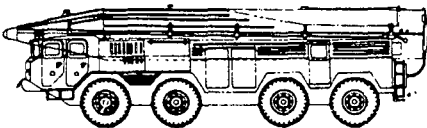

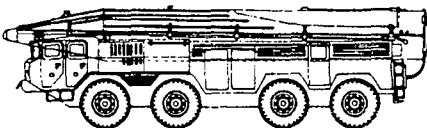
2 meters

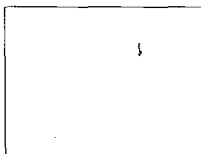
# Characteristics of Soviet Theater Nuclear Missiles and Rockets

MRBMs and IRBMs	RVs	Yield (each RV)	Range	CEP	Operational mode	Year operational
<b>SS-4</b> 	1		2,000 km		Soft pads or quadruple silos	1958
<b>SS-5</b> 	1		4,100 km		Soft pads or triple silos	1961
<b>SS-20</b> 	3 MIRVs		CIA 4,400 km, DIA 5,000 km		Mobile	1977

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### Principal Tactical Missiles and Rockets

	Warhead	Range	CEP at 2/3 Range	Year Operational
<b>SS-1 Scud B</b> 	Nuclear — CW; possible ICM; HE	300 km		1961
<b>FROG-7</b> 	Nuclear — CW; ICM; HE	70 km		1965
<b>SS-12 Scaleboard</b> 	Nuclear —	925 km		1965
<b>SS-21</b> 	Nuclear — CW; ICM; possible FAE; HE	120 km		1976 ?
<b>SS-22</b> 	Nuclear — 30/100/300 kt; possible CW/ICM/HE	925 km		1977 ?
<b>SS-X-23</b> No drawing available	Nuclear — 10/30/200 kt; CW; probable ICM; HE	500 km	285 m	1981



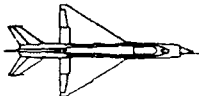
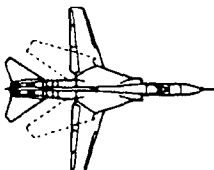
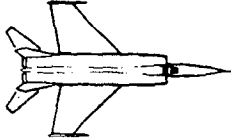
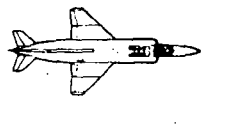
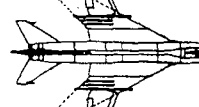
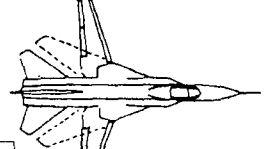

2 meters

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## Characteristics of Selected Soviet Tactical Aircraft and Peripheral Bombers

### Newer Tactical Aircraft

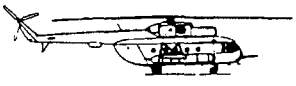

		Maximum Operational Radius <sup>a</sup>	Maximum Payload	Maximum Speed	Year Operational
<b>MIG-21</b> Fishbed J/N		250 nm with 4 AAMs  210 nm with 4 250-kg bombs	1 metric ton	1,260 kn	1968/73
<b>MIG-23</b> Flogger B/G		440 nm with 4 AAMs	2 metric tons	1,350 kn	1972/78
<b>MIG-27</b> Flogger D/J		295 nm with 8 250-kg bombs	4 metric tons	975 kn	1975/78
<b>MIG-25</b> Foxbat B/D		495 nm (reconnaissance)		1,625 kn	1972/74
<b>YAK-38</b> Forger A		190 nm with 125 kg of rockets	1.2 metric tons	660 kn	1974
<b>SU-17</b> Fitter D/H		250 nm with 8 250-kg bombs	4 metric tons	1,205 kn	1976/77
<b>SU-24</b> Fencer A		550 nm with 10 250-kg bombs	4.5 metric tons	1,435 kn	1974

5 meters

<sup>a</sup> The radius given is for a mission flown mostly at high altitudes at subsonic speeds (except for the Foxbat, which is assumed to fly at over twice the speed of sound).

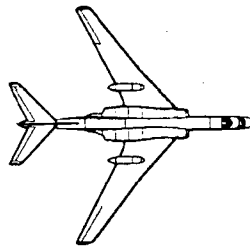
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### Combat Attack Helicopters

		Maximum Operational Radius	Armament	Maximum Speed	Year Operational
<b>MI-8</b> Hip E		95 nm with 1,410-kg weapon load	AT-2 ATGM, rockets	125 kn	1977
<b>MI-24</b> Hind E		135 nm with 1,195-kg weapon load	AT-6 ATGM, rockets, gatling gun	170 kn	1979

5 meters

### Intermediate-Range Bombers

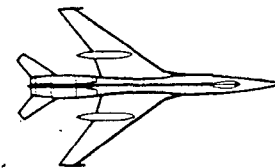


**TU-16**  
Badger

Maximum operational radius<sup>b</sup>  
with

1,100 nm      1,450 nm  
2 AS-5s or AS-6s      3,000 kg of bombs  
(About half carry two AS-5 or AS-6 missiles.)  
540 kn  
1954

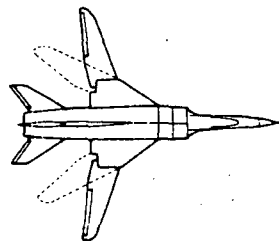
Maximum speed  
Year operational



**TU-22**  
Blinder

1,330 nm      1,520 nm  
1 AS-4      3,000 kg of bombs  
(About half carry the AS-4 missile.)  
1,030 kn  
1962

### TU-22M Backfire Bomber



Max operational radius<sup>b</sup>  
with

**CIA Estimate**  
1,400-1,650 nm  
2 AS-4s  
(Can carry up to three  
1,825-2,150 nm  
4,500 kg of bombs  
1,050 kn  
1974

**DIA Estimate**  
2,600 nm  
2 AS-4s  
AS-4 missiles.)  
2,950 nm  
9,400 kg of bombs  
1,150 kn  
1974

Max operational radius<sup>b</sup>  
with

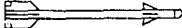
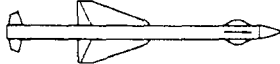
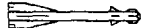
Maximum speed  
Year operational

10 meters

<sup>b</sup>The radius given is for a mission flown  
entirely at high altitudes.

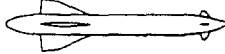

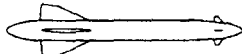
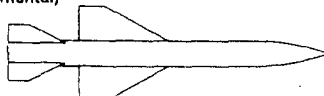

# Characteristics of Soviet Tactical Aviation Weapons

## Tactical Air-to-Air Missiles

	Principal Carrier	Maximum Range	Guidance	Year Operational
<b>AA-2</b> Atoll 	MIG-21	7.5 km	Semiactive radar or infrared seeker	1960
<b>AA-7</b> Apex 	MIG-23	18.5 km	Semiactive radar or infrared seeker	1974
<b>AA-8</b> Aphid 	MIG-21, MIG-23	5.5 km	Infrared seeker	1975


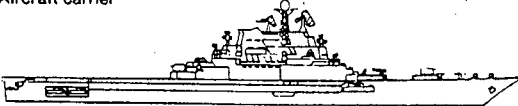



1 meter

## Tactical Air-to-Surface Missiles

	Principal Carrier	Maximum Range	Guidance	Year Operational
<b>AS-7</b> Kerry 	MIG-27, SU-17, SU-24	11 km	Command or beam riding	1971
<b>AS-9</b> 	SU-17, SU-24	56 km	Antiradiation homing	1975
<b>AS-10</b> 	MIG-27, SU-17, SU-24	15 km	Semiactive laser	1976
<b>AS-X-11 (developmental)</b> 		75 km	Antiradiation homing	1981
<b>AS-X-12 (developmental)</b> No drawing available 		65 km	Antiradiation homing	1981

1 meter

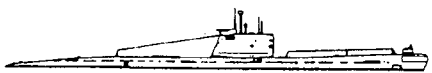





## Characteristics of Newer Soviet Major Surface Ships

Over 3,000 metric tons	Armament	Propulsion	Displacement	Year Operational
<b>Krivak Class</b> Guided-missile frigate 	SA-N-4 SS-N-14 ASW missile	Gas turbine	3,800 metric tons	1970
<b>Kiev Class</b> Aircraft carrier 	32-36 ASW helicopters and V/STOL fighters SS-N-12 antiship cruise missile SA-N-3, SA-N-4 SUW-N-1 ASW rocket	Steam	38,000 metric tons	1976
<b>Ivan Rogov Class</b> Amphibious assault ship 	SA-N-4 Battalion landing team Air-cushion vehicles	Gas turbine	13,100 metric tons	1978
<b>Kirov Class</b> Guided-missile cruiser 	SS-N-14 SA-NX-6 SS-NX-19 antiship cruise missile	Combined nuclear and conventional	about 25,000 metric tons	1980
<b>Sovremenny Class</b> Guided-missile cruiser/destroyer 	Medium-caliber naval guns Probable SSM SA-NX-7	Probably gas turbine	about 8,000 metric tons	1981
<b>Udaloy Class</b> Guided-missile cruiser/destroyer No drawing available	SS-N-14	Probably gas turbine	about 8,000 metric tons	1981
<b>Kara Class Follow-on (developmental)</b> Guided-missile cruiser No drawing available	SA-NX-6 SS-N-12 SA-N-4	Probably gas turbine	about 11,500 metric tons	1981-82

50 meters



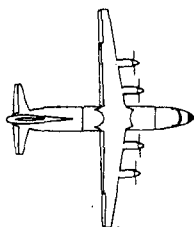
# Characteristics of Newer Soviet Attack Submarines

	Armament	Propulsion	Displacement	Year Operational
<b>F Class</b>	Torpedoes	Diesel	1,900 metric tons	1960
				
<b>T Class</b>	Torpedoes Possible ASW missile	Diesel	3,100 metric tons	1972
				
<b>C-II Class</b>	Torpedoes SS-N-9 antiship cruise missile	Nuclear	4,400 metric tons	1974
				
<b>V-III Class</b>	Torpedoes Probable SS-NX-16 ASW missile	Nuclear	4,700 metric tons	1978
				
<b>A Class</b>	Torpedoes Possible ASW missile	Nuclear	2,700 metric tons	1978
				
<b>O Class</b>	Torpedoes SS-NX-19 antiship cruise missile	Nuclear	10,000 metric tons	?
				
<b>New Class</b>	Torpedoes	Probably diesel	About 2,000 metric tons	?
No drawing available				

20 meters

# Characteristics of Soviet Military Transport Aviation Aircraft

	Maximum paradrop radius <sup>a</sup> with	Maximum airlift range <sup>a</sup> with	Average cruise speed	Year operational
AN-12BP Cub	900 nm 15,000 kg	1,750 nm 15,000 kg	320 kn	1959



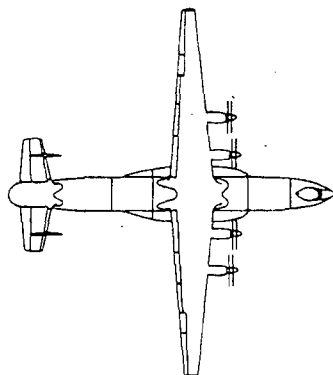
AN-22  
Cock

1,730 nm  
45,000 kg

4,625 nm  
40,000 kg

355 kn

1967



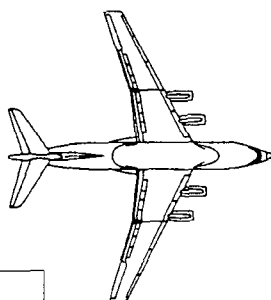
IL-76T  
Candid

2,840 nm  
18,660 kg

3,420 nm  
40,000 kg

415 kn

1974



10 meters

<sup>a</sup> The radius and range given are for missions flown mostly at high altitudes.

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